

ProBlue[®] Adhesive Melter Models P15, P30, and P50

Customer Product Manual

Part 1058683_08

Issued 09/18



This document contains important safety information.
Be sure to read and follow all safety information in this
document and any other related documentation.



NORDSON CORPORATION • DULUTH, GEORGIA • USA
www.nordson.com

For CE Declaration, refer to equipment documentation.

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Section 1

Safety

Read this section before using the equipment. This section contains recommendations and practices applicable to the safe installation, operation, and maintenance (hereafter referred to as “use”) of the product described in this document (hereafter referred to as “equipment”). Additional safety information, in the form of task-specific safety alert messages, appears as appropriate throughout this document.



WARNING! Failure to follow the safety messages, recommendations, and hazard avoidance procedures provided in this document can result in personal injury, including death, or damage to equipment or property.

Safety Alert Symbols

The following safety alert symbol and signal words are used throughout this document to alert the reader to personal safety hazards or to identify conditions that may result in damage to equipment or property. Comply with all safety information that follows the signal word.



WARNING! Indicates a potentially hazardous situation that, if not avoided, can result in serious personal injury, including death.



CAUTION! Indicates a potentially hazardous situation that, if not avoided, can result in minor or moderate personal injury.

CAUTION! (Used without the safety alert symbol) Indicates a potentially hazardous situation that, if not avoided, can result in damage to equipment or property.

Responsibilities of the Equipment Owner

Equipment owners are responsible for managing safety information, ensuring that all instructions and regulatory requirements for use of the equipment are met, and for qualifying all potential users.

Safety Information

- Research and evaluate safety information from all applicable sources, including the owner-specific safety policy, best industry practices, governing regulations, material manufacturer's product information, and this document.
- Make safety information available to equipment users in accordance with governing regulations. Contact the authority having jurisdiction for information.
- Maintain safety information, including the safety labels affixed to the equipment, in readable condition.

Instructions, Requirements, and Standards

- Ensure that the equipment is used in accordance with the information provided in this document, governing codes and regulations, and best industry practices.
- If applicable, receive approval from your facility's engineering or safety department, or other similar function within your organization, before installing or operating the equipment for the first time.
- Provide appropriate emergency and first aid equipment.
- Conduct safety inspections to ensure required practices are being followed.
- Re-evaluate safety practices and procedures whenever changes are made to the process or equipment.

User Qualifications

Equipment owners are responsible for ensuring that users:

- receive safety training appropriate to their job function as directed by governing regulations and best industry practices
- are familiar with the equipment owner's safety and accident prevention policies and procedures
- receive equipment- and task-specific training from another qualified individual

NOTE: Nordson can provide equipment-specific installation, operation, and maintenance training. Contact your Nordson representative for information

- possess industry- and trade-specific skills and a level of experience appropriate to their job function
- are physically capable of performing their job function and are not under the influence of any substance that degrades their mental capacity or physical capabilities

Applicable Industry Safety Practices

The following safety practices apply to the use of the equipment in the manner described in this document. The information provided here is not meant to include all possible safety practices, but represents the best safety practices for equipment of similar hazard potential used in similar industries.

Intended Use of the Equipment

- Use the equipment only for the purposes described and within the limits specified in this document.
- Do not modify the equipment.
- Do not use incompatible materials or unapproved auxiliary devices. Contact your Nordson representative if you have any questions on material compatibility or the use of non-standard auxiliary devices.

Instructions and Safety Messages

- Read and follow the instructions provided in this document and other referenced documents.
- Familiarize yourself with the location and meaning of the safety warning labels and tags affixed to the equipment. Refer to *Safety Labels and Tags* at the end of this section.
- If you are unsure of how to use the equipment, contact your Nordson representative for assistance.

Installation Practices

- Install the equipment in accordance with the instructions provided in this document and in the documentation provided with auxiliary devices.
- Ensure that the equipment is rated for the environment in which it will be used. This equipment has not been certified for compliance with the ATEX directive nor as nonincendive and should not be installed in potentially explosive environments.
- Ensure that the processing characteristics of the material will not create a hazardous environment. Refer to the Safety Data Sheet (SDS) for the material.
- If the required installation configuration does not match the installation instructions, contact your Nordson representative for assistance.
- Position the equipment for safe operation. Observe the requirements for clearance between the equipment and other objects.
- Install lockable power disconnects to isolate the equipment and all independently powered auxiliary devices from their power sources.
- Properly ground all equipment. Contact your local building code enforcement agency for specific requirements.
- Ensure that fuses of the correct type and rating are installed in fused equipment.
- Contact the authority having jurisdiction to determine the requirement for installation permits or inspections.

Operating Practices

- Familiarize yourself with the location and operation of all safety devices and indicators.
- Confirm that the equipment, including all safety devices (guards, interlocks, etc.), is in good working order and that the required environmental conditions exist.
- Use the personal protective equipment (PPE) specified for each task. Refer to *Equipment Safety Information* or the material manufacturer's instructions and SDS for PPE requirements.
- Do not use equipment that is malfunctioning or shows signs of a potential malfunction.

Maintenance and Repair Practices

- Allow only personnel with appropriate training and experience to operate or service the equipment.
- Perform scheduled maintenance activities at the intervals described in this document.
- Relieve system hydraulic and pneumatic pressure before servicing the equipment.
- De-energize the equipment and all auxiliary devices before servicing the equipment.
- Use only new Nordson-authorized refurbished or replacement parts.
- Read and comply with the manufacturer's instructions and the SDS supplied with equipment cleaning compounds.

NOTE: SDSs for cleaning compounds that are sold by Nordson are available at www.nordson.com or by calling your Nordson representative.

- Confirm the correct operation of all safety devices before placing the equipment back into operation.
- Dispose of waste cleaning compounds and residual process materials according to governing regulations. Refer to the applicable SDS or contact the authority having jurisdiction for information.
- Keep equipment safety warning labels clean. Replace worn or damaged labels.

Equipment Safety Information

This equipment safety information is applicable to the following types of Nordson equipment:

- hot melt and cold adhesive application equipment and all related accessories
- pattern controllers, timers, detection and verification systems, and all other optional process control devices

Equipment Shutdown

To safely complete many of the procedures described in this document, the equipment must first be shut down. The level of shut down required varies by the type of equipment in use and the procedure being completed. If required, shut down instructions are specified at the start of the procedure. The levels of shut down are:

Relieving System Hydraulic Pressure

Completely relieve system hydraulic pressure before breaking any hydraulic connection or seal. Refer to the melter-specific product manual for instructions on relieving system hydraulic pressure.

De-energizing the System

Isolate the system (melter, hoses, applicators, and optional devices) from all power sources before accessing any unprotected high-voltage wiring or connection point.

1. Turn off the equipment and all auxiliary devices connected to the equipment (system).
2. To prevent the equipment from being accidentally energized, lock and tag the disconnect switch(es) or circuit breaker(s) that provide input electrical power to the equipment and optional devices.

NOTE: Government regulations and industry standards dictate specific requirements for the isolation of hazardous energy sources. Refer to the appropriate regulation or standard.

Disabling the Applicators

NOTE: Adhesive dispensing applicators are referred to as “guns” in some previous publications.

All electrical or mechanical devices that provide an activation signal to the applicators, applicator solenoid valve(s), or the melter pump must be disabled before work can be performed on or around an applicator that is connected to a pressurized system.

1. Turn off or disconnect the applicator triggering device (pattern controller, timer, PLC, etc.).
2. Disconnect the input signal wiring to the applicator solenoid valve(s).
3. Reduce the air pressure to the applicator solenoid valve(s) to zero; then relieve the residual air pressure between the regulator and the applicator.

General Safety Warnings and Cautions

Table 1-1 contains the general safety warnings and cautions that apply to Nordson hot melt and cold adhesive equipment. Review the table and carefully read all of the warnings or cautions that apply to the type of equipment described in this manual.

Equipment types are designated in Table 1-1 as follows:

HM = Hot melt (melters, hoses, applicators, etc.)

PC = Process control

CA = Cold adhesive (dispensing pumps, pressurized container, and applicators)

Table 1-1 General Safety Warnings and Cautions

Equipment Type	Warning or Caution
HM	 WARNING! Hazardous vapors! Before processing any polyurethane reactive (PUR) hot melt or solvent-based material through a compatible Nordson melter, read and comply with the material's SDS. Ensure that the material's processing temperature and flashpoints will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with SDS requirements can cause personal injury, including death.
HM	 WARNING! Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and applicators contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.
HM, CA	 WARNING! System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt or cold adhesive, causing personal injury.
Continued...	

Table 1-1 General Safety Warnings and Cautions (*contd*)

Equipment Type	Warning or Caution
HM	 WARNING! Molten material! Wear eye or face protection, clothing that protects exposed skin, and heat-protective gloves when servicing equipment that contains molten hot melt. Even when solidified, hot melt can still cause burns. Failure to wear appropriate personal protective equipment can result in personal injury.
HM, PC	 WARNING! Equipment starts automatically! Remote triggering devices are used to control automatic hot melt applicators. Before working on or near an operating applicator, disable the applicator's triggering device and remove the air supply to the applicator's solenoid valve(s). Failure to disable the applicator's triggering device and remove the supply of air to the solenoid valve(s) can result in personal injury.
HM, CA, PC	 WARNING! Risk of electrocution! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. De-energize and electrically isolate all auxiliary devices before servicing the equipment. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.
HM, CA, PC	 WARNING! Risk of fire or explosion! Nordson adhesive equipment is not rated for use in explosive environments and has not been certified for the ATEX directive or as nonincendive. In addition, this equipment should not be used with solvent-based adhesives that can create an explosive atmosphere when processed. Refer to the SDS for the adhesive to determine its processing characteristics and limitations. The use of incompatible solvent-based adhesives or the improper processing of solvent-based adhesives can result in personal injury, including death.
HM, CA, PC	 WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others and can damage to the equipment.

Equipment Type	Warning or Caution
HM	 CAUTION! Hot surfaces! Avoid contact with the hot metal surfaces of applicators, hoses, and certain components of the melter. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.
HM	CAUTION! Some Nordson melters are specifically designed to process polyurethane reactive (PUR) hot melt. Attempting to process PUR in equipment not specifically designed for this purpose can damage the equipment and cause premature reaction of the hot melt. If you are unsure of the equipment's ability to process PUR, contact your Nordson representative for assistance.
HM, CA	CAUTION! Before using any cleaning or flushing compound on or in the equipment, read and comply with the manufacturer's instructions and the SDS supplied with the compound. Some cleaning compounds can react unpredictably with hot melt or cold adhesive, resulting in damage to the equipment.
HM	CAUTION! Nordson hot melt equipment is factory tested with Nordson Type R fluid that contains polyester adipate plasticizer. Certain hot melt materials can react with Type R fluid and form a solid gum that can clog the equipment. Before using the equipment, confirm that the hot melt is compatible with Type R fluid.

Other Safety Precautions

- Do not use an open flame to heat hot melt system components.
- Check high pressure hoses daily for signs of excessive wear, damage, or leaks.
- Never point a dispensing hand-held applicator at yourself or others.
- Suspend dispensing hand-held applicator by their proper suspension point.

First Aid

If molten hot melt comes in contact with your skin:

1. Do NOT attempt to remove the molten hot melt from your skin.
2. Immediately soak the affected area in clean, cold water until the hot melt has cooled.
3. Do NOT attempt to remove the solidified hot melt from your skin.
4. In case of severe burns, treat for shock.
5. Seek expert medical attention immediately. Give the SDS for the hot melt to the medical personnel providing treatment.

Safety Labels and Tags

Figure -1 illustrates the location of the product safety labels and tags affixed to the equipment. Table -2 provides an illustration of the hazard identification symbols that appear on each safety label and tag, the meaning of the symbol, or the exact wording of any safety message.

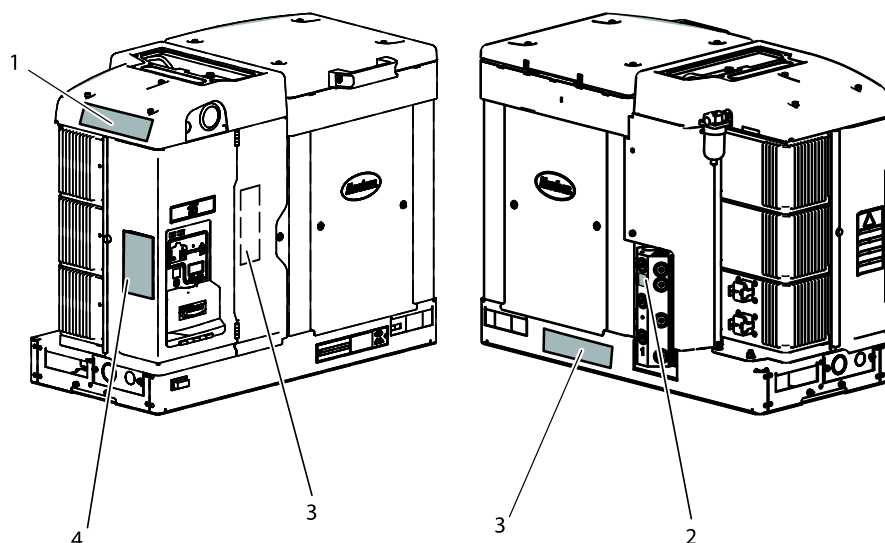


Figure 1-1 Safety labels and tags

Table 1-2 Safety Labels and Tags

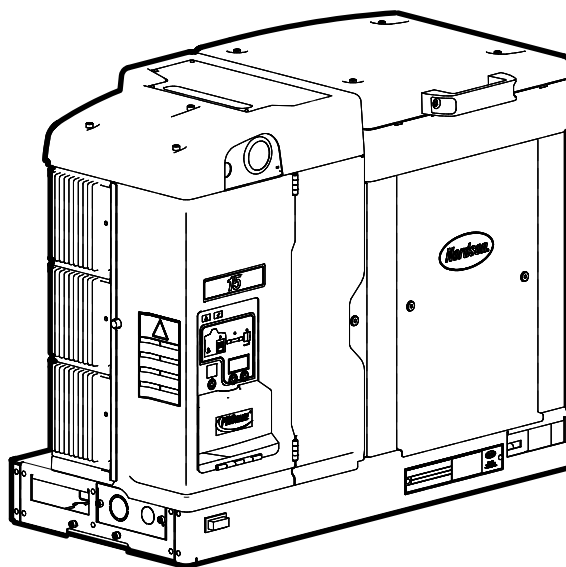
Item	Description
1	CAUTION: Burn Hazard. Hot Surface
2	Symbol means: Hot Surface! Do not touch.
3	WARNING Burn hazard. Hot adhesive. Release pressure before servicing.
4	WARNING Hazardous voltage. Disconnect all power supply connections before servicing.

Section 2

Description

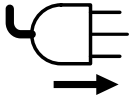
This manual describes the installation and use of the ProBlue® P15, P30, and P50 adhesive melter. When necessary, the reader is referred to the documentation supplied with other Nordson products or products supplied by third parties.

With the exception of tank capacity, hose/applicator capacity, and exterior appearance, all ProBlue melters are functionally identical. To simplify the presentation of information in this manual, depictions of the model P15 are used generically throughout this manual to represent all ProBlue melters.



Other Sources of Information

Refer to the following additional resources for quick-reference information, technical support, and information about getting the most out of your ProBlue melter.



Installation Guide

The installation guide shipped with the melter provides a visual quick-reference for installing the melter.



User's Guide

The user's guide shipped with the melter provides a visual quick-reference to the most common operator-level tasks. The guide is appropriately sized and laminated so that it can be kept with the melter on the production floor.



Online Support

Visit www.enordson/support to download melter firmware updates and software utilities.

Product Description

See Figure 2-1 Nordson ProBlue adhesive melters are used in conjunction with Nordson hot melt hoses and applicators to create a hot melt application system.

The melter liquifies solid-form hot melt and maintains the hot melt at the desired temperature. When the applicators are activated, the melter pumps the liquified hot melt through the hoses and out the applicator nozzles, where it is commonly applied to the surface of a product or package.

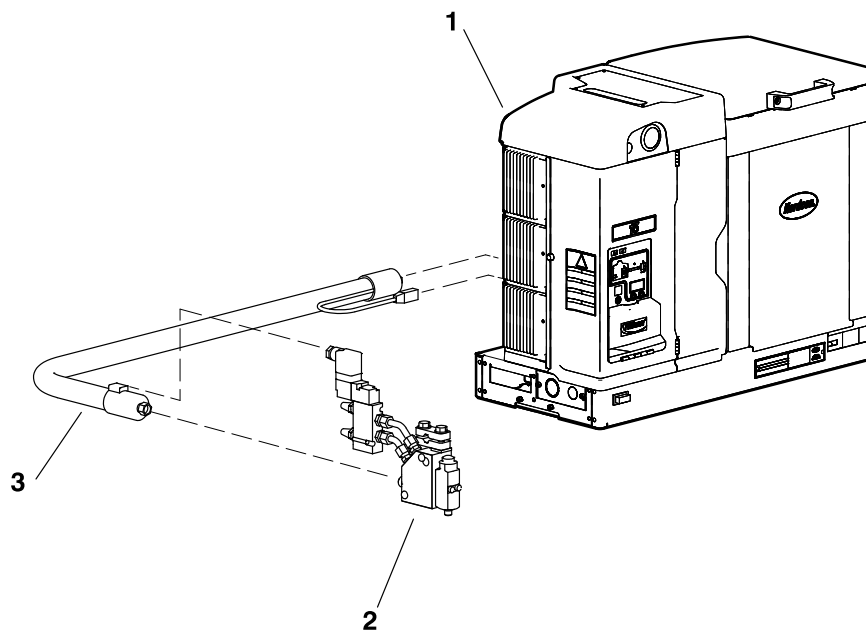


Figure 2-1 System components

- | | |
|------------------------|------------------|
| 1. ProBlue melter | 3. Hot melt hose |
| 2. Hot melt Applicator | |

Intended Use

ProBlue melters are specifically designed to:

- Melt and pump solid-form hot melt materials that are engineered to be liquified and extruded at temperatures below 230 °C (450 °F)
- Be used with compatible hot melt hoses and applicators that are manufactured by Nordson Corporation
- Be used in non-explosive environments

Limitations of Use

Use ProBlue melters only for the purpose for which they are designed. ProBlue melters should not be used

- to melt or pump polyurethane reactive or polyamid hot melt materials or any other material that creates a health or safety hazard when heated
- in environments that will require the melter to be cleaned using a water wash or spray

Modes of Operation

ProBlue melters operate in the following modes:

Automatic scan—The melter automatically checks and displays the current temperature of the tank, hoses, and applicators to confirm that they are within their pre-defined temperature range. By default, the melter is always in the automatic scan mode unless it is placed into another operating mode.

Standby—The temperatures of the tank, hoses, and applicators are reduced down from their operating temperature (hereafter referred to as set-point temperature) by a pre-set number of degrees.

Setup—The setup mode is used to configure melter control options and features and to review stored operating data. To prevent unauthorized changes to the melter's configuration, the melter can be password-protected

Fault—The melter alerts the operator when an abnormal event occurs.

Melter Identification

See Figure 2-2. You will need the model and part number of your melter when requesting service or ordering spare parts and optional equipment. The model and part number are indicated on the equipment identification plate that is located on the front of the melter.

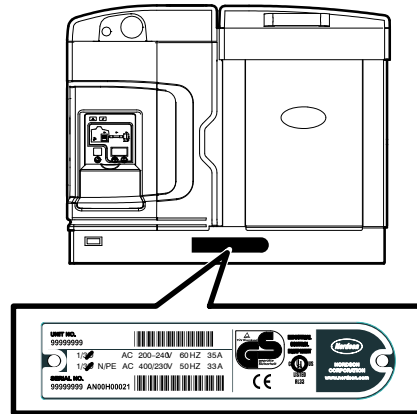


Figure 2-2 Equipment identification plate

Key Components

Figure 3-3 provides the name and the location of key melter components.

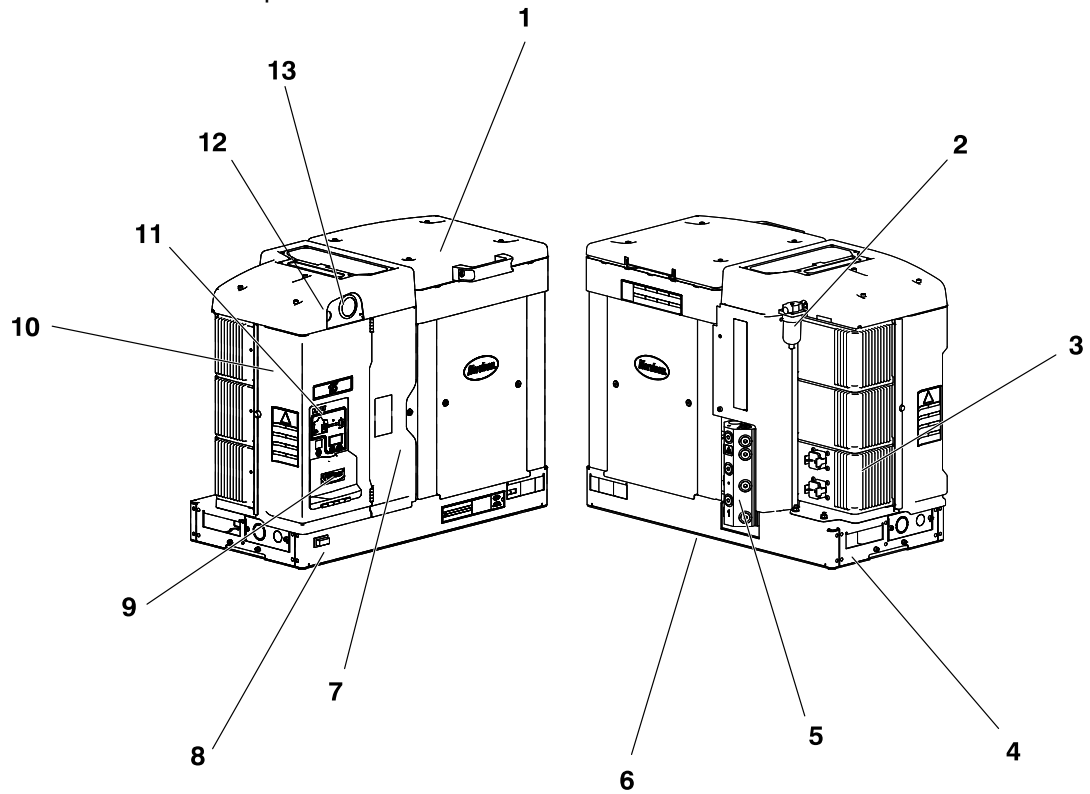


Figure 2-3 Key components

- | | | |
|----------------------------|-------------------------------|------------------------------------|
| 1. Tank | 6. Sub-base | 11. Control panel (see Figure 2-4) |
| 2. Air filter | 7. Pump enclosure door | 12. Pressure adjustment screw |
| 3. Hose/applicator modules | 8. Control switch | 13. Pressure gauge |
| 4. Chassis | 9. Keypad door | |
| 5. Manifold | 10. Electrical enclosure door | |

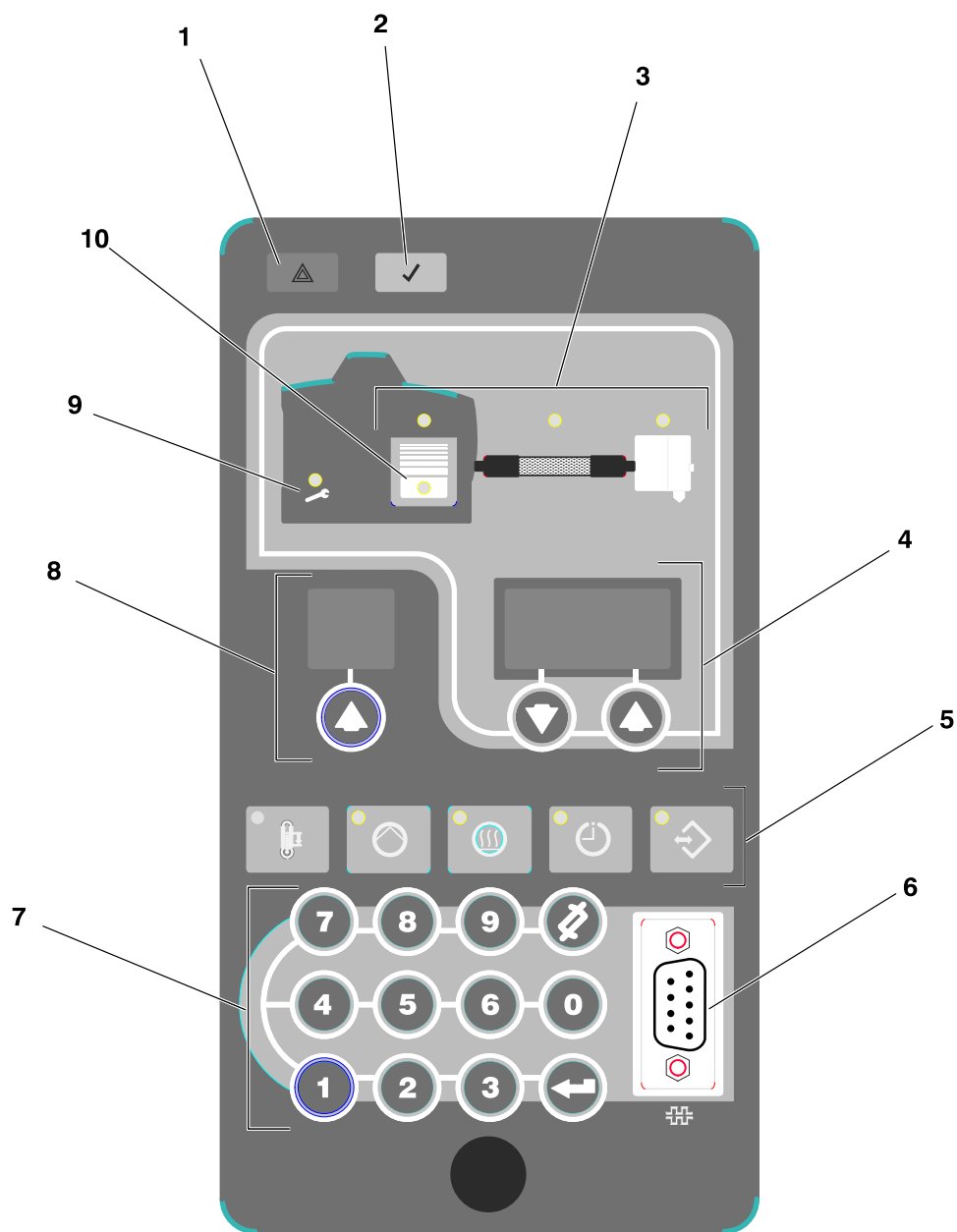


Figure 2-4 Control panel

- | | |
|----------------------------------|--------------------------------|
| 1. Fault LED | 6. Serial port |
| 2. Ready LED | 7. Keypad |
| 3. Component keys/LEDs | 8. Left display and scroll key |
| 4. Right display and scroll keys | 9. Service LED |
| 5. Function keys | 10. Tank low-level LED |

Optional Equipment

The following equipment may be ordered to expand the functionality and capacity of ProBlue adhesive melters.

- **Input/output (I/O) expansion cards** that allow you to expand the number of available control inputs.
- **Communications cards** that allow the melter to communicate with other process equipment or a controller that uses standard network protocols.
- **Hose/Applicator modules** that allow you to increase the number of hoses/applicators that can be connected to the melter.

Section 3

Installation



WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

Quick-Start

If you have already installed the melter using the installation guide that is provided inside the shipping container, and you have no questions concerning the installation, go to *Setting Up the Melter* later in this section for information about how to prepare the melter to operate with your manufacturing process.

Overview

ProBlue melters are factory-configured for each order and require only the assembly and set up tasks described in this section. If your melter was ordered as a complete system, the shipping container will also contain one or more hot melt hoses and applicators.

The melter is shipped from the factory with an installation kit that contains components that must be assembled onto the melter by the customer. Some additional materials must also be supplied by the customer to complete the installation.

If optional equipment was ordered with the melter, refer to the documentation provided with the optional equipment for installation and operating instructions.

Overview *(contd)*

The illustrations accompanying the procedures in this section depict the P15 melter. Unless otherwise noted, the instructions also apply to the P30 and P50 melter.

Additional Information



This section presents installation procedures in their most commonly used form. Procedural variations or special considerations are explained in the additional information table that follows most procedures. Where applicable, some table entries also contain cross-reference information. Additional information tables are indicated by the symbol shown to the left.

Installation Tasks

The installation sequence is as follows:

1. Verify that the required environmental conditions and utilities exist.
2. Unpack and inspect the melter.
3. Mount the transformer/melter onto the parent machine or support structure.
4. Configure the electrical service.
5. Connect a 24 VDC control for the pump (single-acting pump only).
6. Connect a compressed air supply.
7. Connect hot melt hoses and applicators.
8. Set up the melter to work with the manufacturing process.
9. (Optional) Install inputs and outputs.
10. Install optional equipment.
11. Connect a applicator driver, pattern controller, or timer.
12. Flush the melter.
13. (Optional) Set up communications between the melter and a PC.

Experience of Installation Personnel

The instructions provided in this section are intended to be used by personnel who have experience in the following subjects:

- Hot melt application processes
- Industrial power and control wiring
- Industrial mechanical installation practices
- Basic process control and instrumentation

Installation Requirements

Before installing the melter, ensure that the desired installation location provides the required clearances, environmental conditions, and utilities.

Clearances

Figure 3-1 illustrates the *minimum* clearances that are required between the melter and surrounding objects. Table 3-1 describes each clearance.

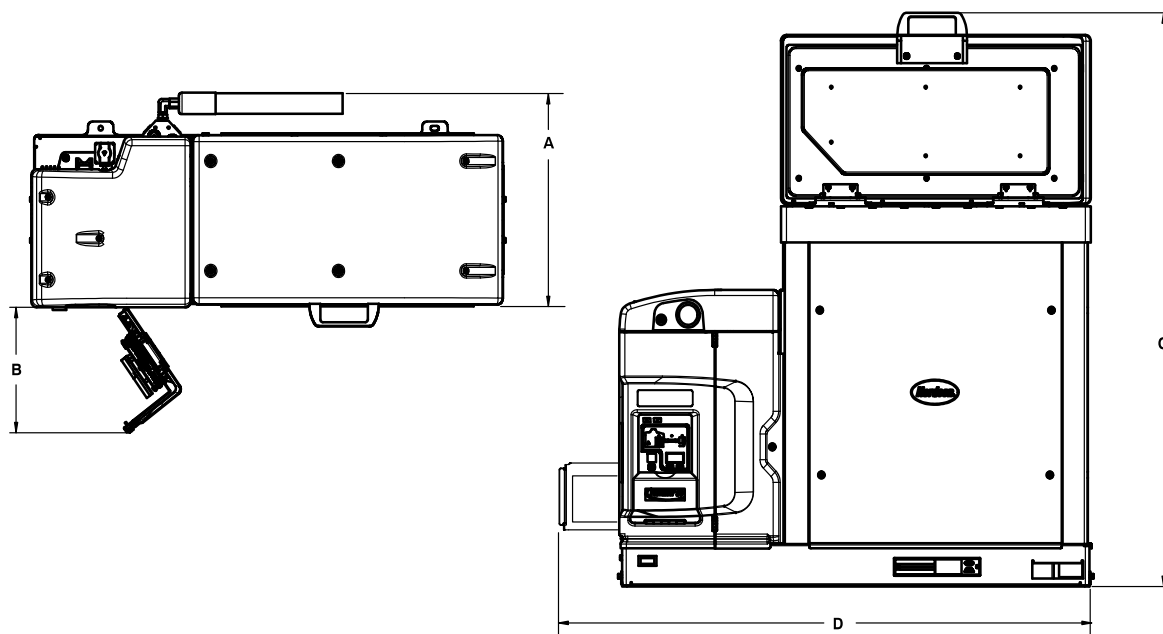


Figure 3-1 Minimum installation clearances (Top and side views shown)

Table 3-1 Installation Clearances

Item	Description	Required Clearance		
		P15	P30	P50
A	The distance from the outside edge of a $\frac{5}{16}$ -inch Nordson hose to the front face of the melter when a short 90-degree hose fitting is to connect the hose to the melter	394 mm (15.50 in.)	392 mm (15.4 in.)	392 mm (15.4 in.)
B	The clearance required to open the pump enclosure door	232 mm (9.13 in.)	232 mm (9.13 in.)	232 mm (9.13 in.)
C	The distance from the melter sub-base to the front edge of the tank lid when the lid is at its highest point.	1061 mm (41.79 in.)	859 mm (33.8 in.)	1062 mm (41.8 in.)
D	The clearance required on the left side of the melter to open the electrical enclosure door or remove a hose/applicator module.	1043 mm (41.00 in.)	1044 mm (41.1 in.)	1044 mm (41.1 in.)

Ventilation

See Figure 3-2. ProBlue melters are cooled by convection. Air is drawn in through openings in the chassis of the melter and is exhausted out of the ventilation slots at the top of the melter.

CAUTION! Do not block the air intake openings and ventilation slots.

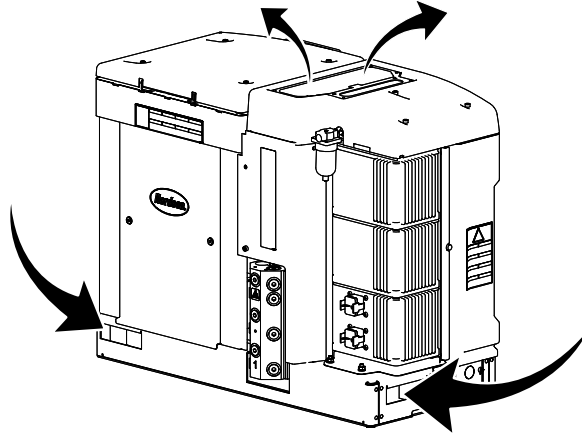


Figure 3-2 Melter cooling

Electrical Power

Before installing the melter, ensure that the melter will not be overloaded and that the plant's electrical service is rated to handle the power required by the melter and the hoses and applicators that you plan to use.

Refer to Appendix A, *Calculating Melter Power Requirements*, for information about how to calculate the maximum allowable hose lengths and applicator wattages that can be used in your manufacturing application.



WARNING! Risk of electrocution! Install a lockable power disconnect switch between the electrical service and the melter. Failure to install or properly use the disconnect switch when servicing the melter can result in personal injury, including death.

Compressed Air

To achieve maximum hot melt output, the melter must be connected to an air supply that is capable of providing a maximum of 6.2 Bar (90 psi) of dry, nonlubricated air. The actual pressure required for the melter to support your manufacturing process will depend on such factors as the type of hot melt and applicator you are using and the required dimensions of the hot melt bead.

NOTE: The minimum operating air pressure is 0.7 bar (10 psi). Operating the melter with the air pressure set to less than 0.7 bar (10 psi) may cause the pump to function erratically.

Nordson recommends that an isolation valve be installed in the plant air supply line just before the melter.

Other Considerations

Consider the following additional factors when evaluating where to install the melter.

- The maximum distance between the melter and each applicator is dictated by the power requirement of each hose. Refer to Appendix A, *Calculating Melter Power Requirements* for information about how to determine the maximum allowable length.
- The operator must be able to safely reach the control panel and accurately monitor the control panel indicators.
- The operator must be able to safely observe the level of hot melt inside the tank.
- The melter must be installed so that it can be safely removed from its sub-base.
- The melter must be installed away from areas with strong drafts or where sudden temperature changes occur.
- The melter must be installed where it will be in conformance with the ventilation requirements specified in the Material Safety Data Sheet for the hot melt being used.
- The melter should not be exposed to excessive vibration.

Unpacking the Melter

Before starting the installation, remove the melter from the pallet, locate the installation kit and the sub-base. Inspect the melter for damaged and missing parts. Report any problems to your Nordson representative.

Contents of the Installation Kit

The installation kit provided with the melter contains the components shown in Figure 3-3. The quantity and type of hose fittings provided in the kit depends upon the melter's model number and configuration.

The installation kit also contains a package of safety label overlays that are printed in variety of languages. If required by local regulations, the appropriate language overlay should be applied over the English version of the same label. Refer to Section 1, *Safety Labels and Tags*, for the location of each safety label.

Customer-Supplied Materials

The following additional materials are also required to install the melter.

- A power cable. If the cable clamp that is provided in the installation kit is not used, rigid or flexible electrical conduit will be required
- Four 8 mm ($\frac{5}{16}$ in.) machine bolts with locking hardware
- A plant air supply with an in-line isolation valve
- (Single-acting pump only) external 24 VDC voltage source for control of pump

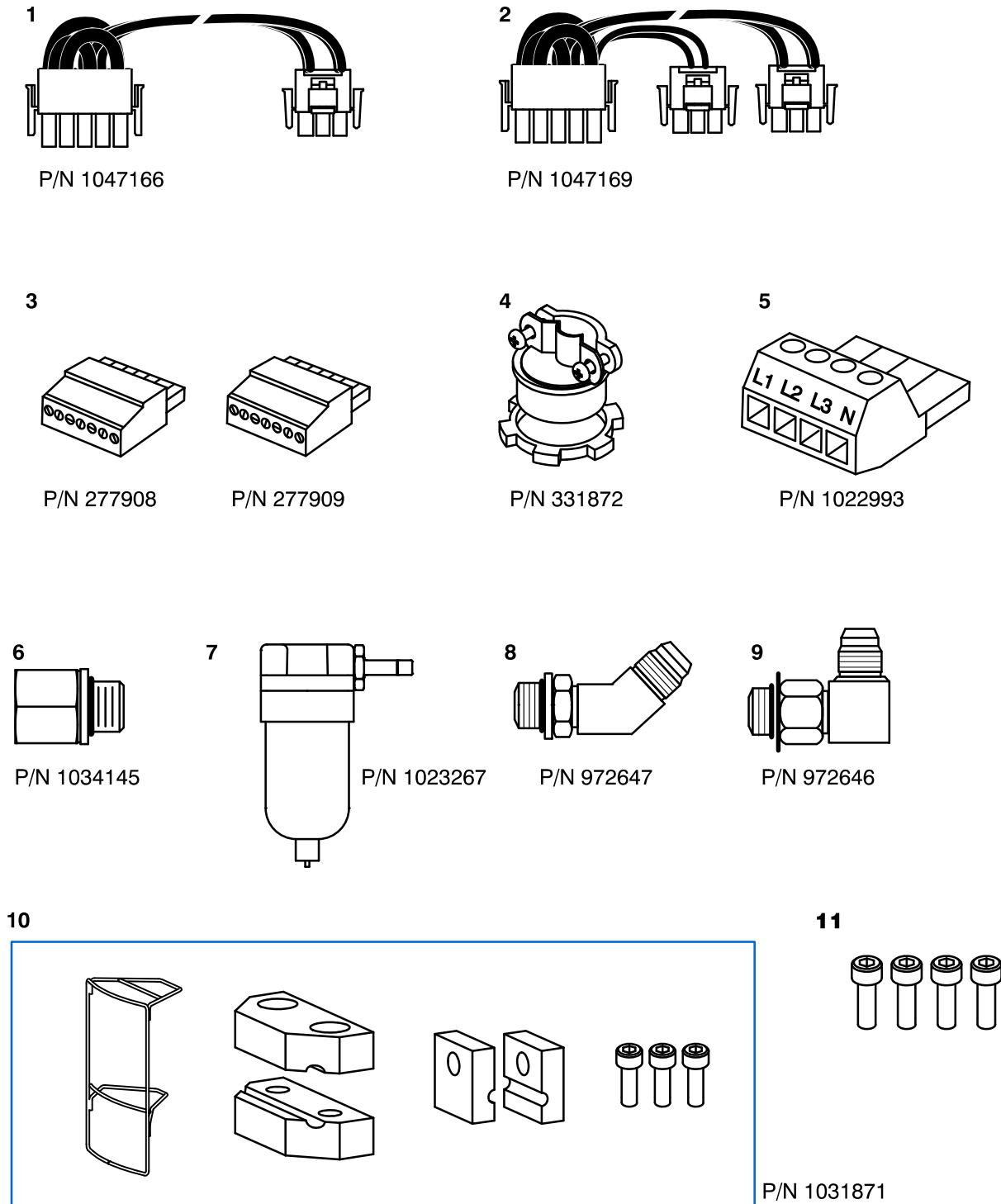
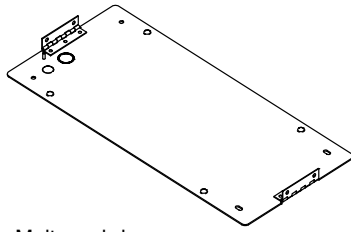


Figure 3-3 Installation kit components

- | | | |
|-----------------------------------|---------------------------|-------------------------|
| 1. Voltage plug (2) | 6. NPTF-to-BSPP adapter | 11. Mounting screws (4) |
| 2. Voltage plug with neutral (2) | 7. Air filter | |
| 3. Input and Output connector (2) | 8. 45-degree hose fitting | |
| 4. Cable clamp | 9. 90-degree hose fitting | |
| 5. Electrical connector | 10. 6-hose manifold guard | |

Mounting the Melter



Melter sub-base

ProBlue melters use a unique mounting sub-base that allows the melter to be easily mounted onto and removed from the parent machine or support structure, without the need to unbolt the melter.

Before mounting the melter, ensure that the parent machine or support structure is level with respect to the floor, provides an even mounting surface, is free of excessive vibration, and that it is capable of supporting the combined weight of the melter, a full tank of hot melt, and the hoses and applicators.

Refer to Section 8, *Technical Data*, for the dimensions of the sub-base and the weight of the melter. Refer to the technical data provided by the hot melt manufacturer for information about the volumetric weight of the hot melt.

To mount the melter

See Figure 3-4.

1. Remove the PG-21 conduit knockout from the sub-base. See Figure 8-4 for the location of the conduit knockout.
2. Lay out the sub-base bolt pattern on the parent machine or support structure and then drill/tap holes for four 8 mm ($\frac{5}{16}$ in.) mounting bolts (customer-supplied).

NOTE: The mounting sub-base has the same bolt-mounting pattern as Nordson's 3500V melter.

3. Bolt the sub-base to the parent machine using four 8-mm ($\frac{5}{16}$ in.) machine bolts with locking hardware.



WARNING! Risk of electrical shock or short circuit. Use the cable clamp that is provided or use electrical conduit to protect the power cable from the sharp edge of the conduit knockout.

4. Install the cable clamp in the PG-21 conduit knockout.
5. Route the power cable between the power disconnect switch and the melter and through the cable clamp. Tighten the cable clamp.



WARNING! Risk of Hand Injury

Do not lower the melter onto the sub-base with the hinges in the vertical position. Always lay the hinges flat before lowering the melter onto the sub-base. See Figure 3-4 for correct hinge position.

6. Fold down the mounting hinges on each side of the sub-base.
7. Using the lifting points shown in Figure 3-4, carefully lower the melter onto the sub-base so that the sub-base hinges line up with the mounts on either side of the melter.
8. Secure the melter to the sub-base using the four mounting screws provided in the installation kit.

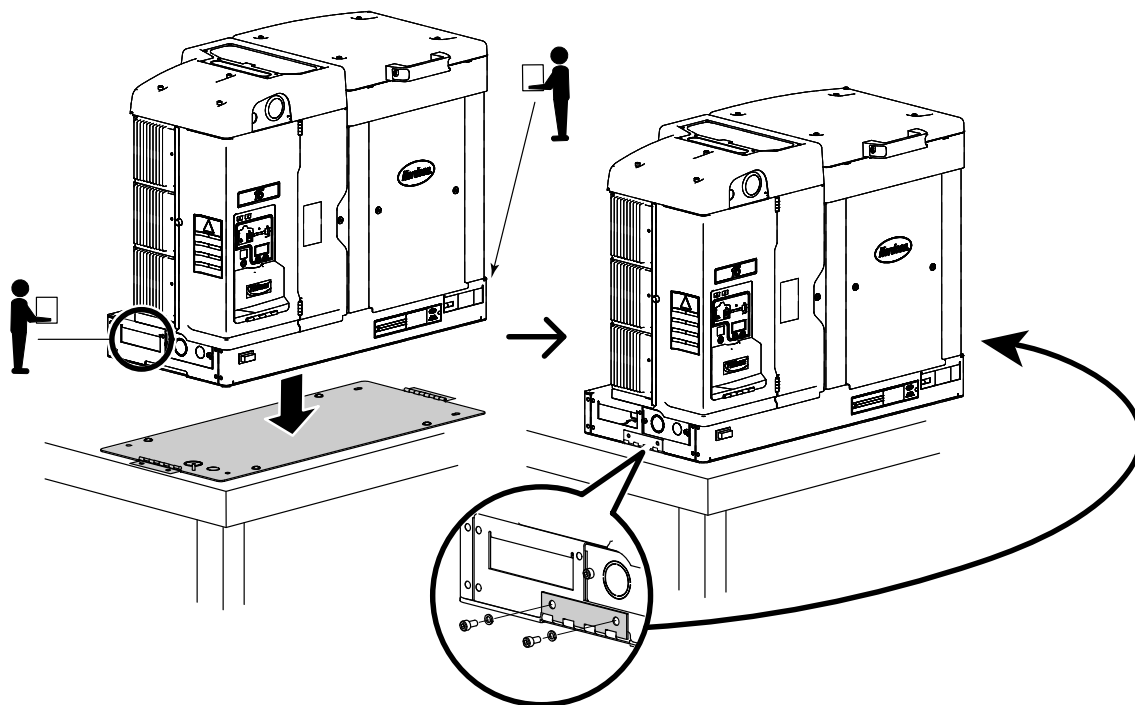
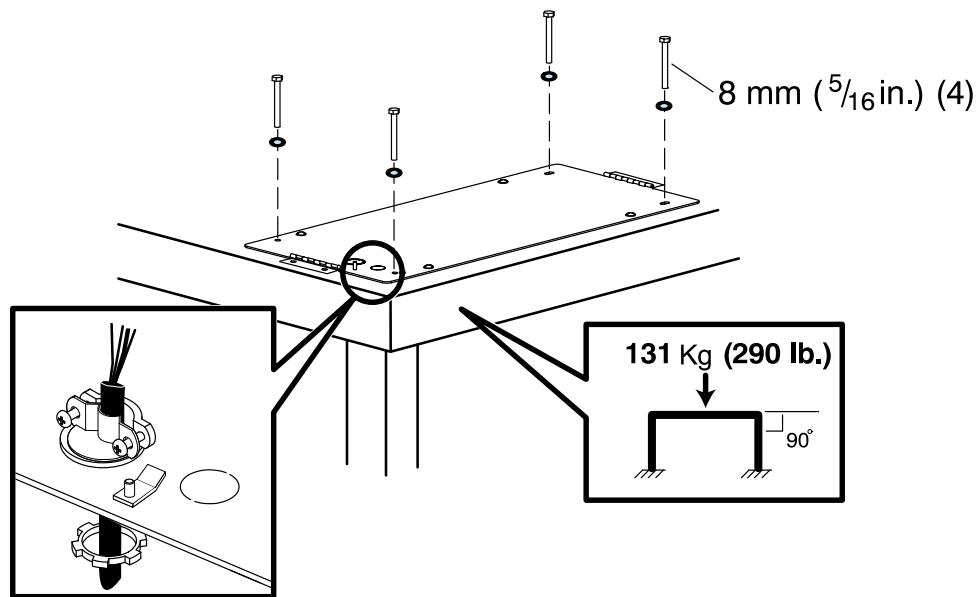


Figure 3-4 Mounting the sub-base and the melter

Configuring the Electrical Service

ProBlue melters are shipped from the factory without an attached power cable and without an electrical service type specified. To configure the melter to function in your facility, you must connect a power cable and a Nordson-supplied voltage plug to the melter.

To connect a power cable to the melter

1. Select a power cable rated for the maximum amperage required by the melter. Ensure that the power cable meets applicable electrical codes and standards.

The maximum power draw for each ProBlue shipping configuration, operating at 230 volt 3-phase are listed in Table 3-2. The values presented in Table 3-2 assume that each hose applicator module is being used at its maximum capacity of 2000 watts.

NOTE: Contact your Nordson representative for assistance in calculating the melter's power draw for operating voltages other than 230 volts or for assistance in calculating the exact power draw for specific hoses and applicators that are manufactured by Nordson Corporation.

Table 3-2 Melter Power Requirement

Melter	Number of Hoses/ Applicators	Supply Power (Amp)		
		1-Phase*	3-Phase	
			Without Neutral	With Neutral
P15				
	2	22 A	15 A	9 A
	4	30 A	23 A	17A
	6	--	26 A	17A
P30 P50	2	26 A	19 A	13 A
	4	35 A	26 A	17 A
	6	--	26 A	17 A

*Requires voltage plug PN 1047167 or PN 1047171 (with neutral).

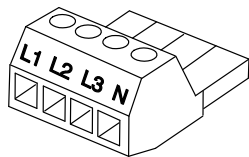


WARNING! Risk of electrocution! Install a lockable power disconnect switch between the electrical service and the melter. Failure to install or properly use the disconnect switch when servicing the melter can result in personal injury, including death.

2. Open the electrical enclosure door.
3. Route the power cable into the wire tray in the base of the electrical enclosure.

NOTE: If the power cable cannot be routed through the conduit knockout provided in the sub-base (Refer to *Mounting the Melter* earlier in this section), route the cable through the optional knockout provided on the left side of the chassis.

See Figure 3-5.



Electrical connector
(P/N 1022993)

4. Connect each power cable lead to the appropriate terminal on the electrical connector (P/N 1022993). Table 3-3 describes the terminal connections for each type of electrical service.
5. Plug the electrical connector into receptacle TB1 on the main board.



WARNING! Risk of electrical shock. Please ensure steps 6 and 7 are completed before using the melter.

6. Connect the ground lead from the power cable to the ground lug that is located on the chassis. The lug is marked PE/G.
7. Connect the ground jumper that is connected to the ground lug, to the ground post that is located on the sub-base.

To connect a power cable to the melter (contd)

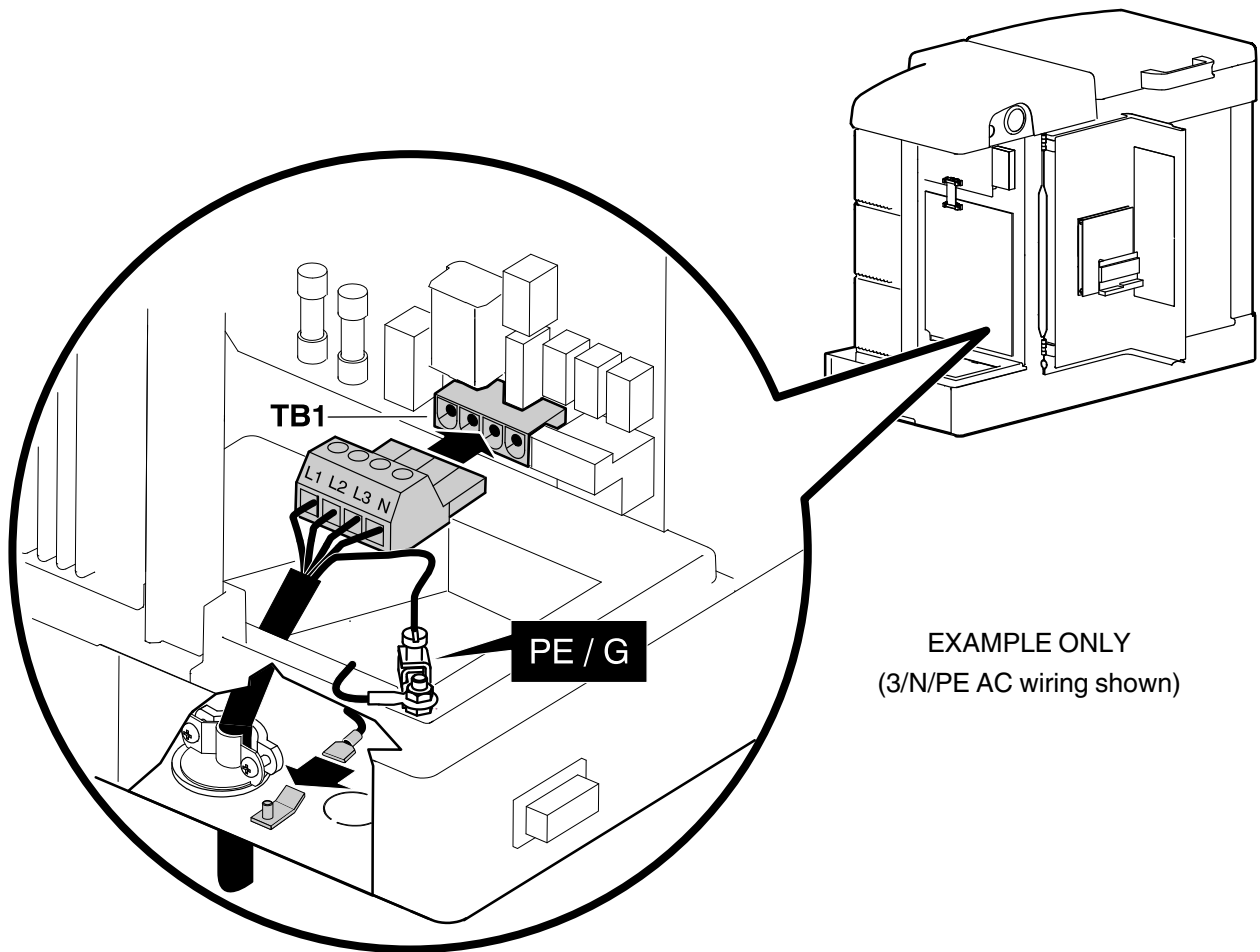


Figure 3-5 Connecting the power cable, ground lead, and ground jumper

Table 3-3 Electrical Service Information

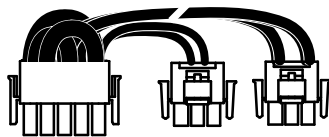
If the Electrical Service Type is..		Use Electrical Connector Terminals..				Use Voltage Plug..
		L1	L2	L3	N	
400/230 VAC 3-phase (4-wire service, including a neutral) See note.	3/N/PE AC 400/230V	●	●	●	●	1047169 Red/Yellow
200 to 240 VAC 3-phase (3-wire service without a neutral)	3/PE AC 200–240V	●	●	●		1047166 Red/Green
200 to 240 VAC 1-phase	1/PE AC 200–240V	●	●			1047167* Blue/Green
200 to 240 VAC 1-phase with neutral	1/N/PE AC 200–240V	●			●	1047171* Blue/Yellow
NOTE: The 400/230 VAC 3-phase service (4-wire service including neutral) includes the 415/240 VAC 3-phase (4-wire service, including neutral) voltage. *Single phase voltage plugs must be ordered separately. Refer to Section 8, <i>Parts</i> .						

To connect a voltage plug to the melter

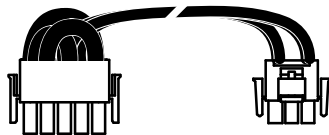
1. Refer to Table 3-3 to determine the part number of the voltage plug that matches the required electrical service.

NOTE: Each voltage plug is color-coded and is labeled with its part number and service type.

See Figure 3-6.



PN 1047169



PN 1047166

Voltage plugs with and without the neutral lead

2. Connect the correct voltage plug between receptacle J1 on the main board and receptacle J3 on the driver board. Ensure that the plug snaps into place. If you are using plug PN 1047169, connect the short lead (neutral lead) to receptacle J2 on the main board.
3. When the electrical service is completely installed and inspected in accordance with local electrical codes and standards, close the electrical enclosure door and switch the local power disconnect switch on.

If the electrical service was configured correctly, the melter control panel will display dashes.

To connect a voltage plug to the melter (contd)

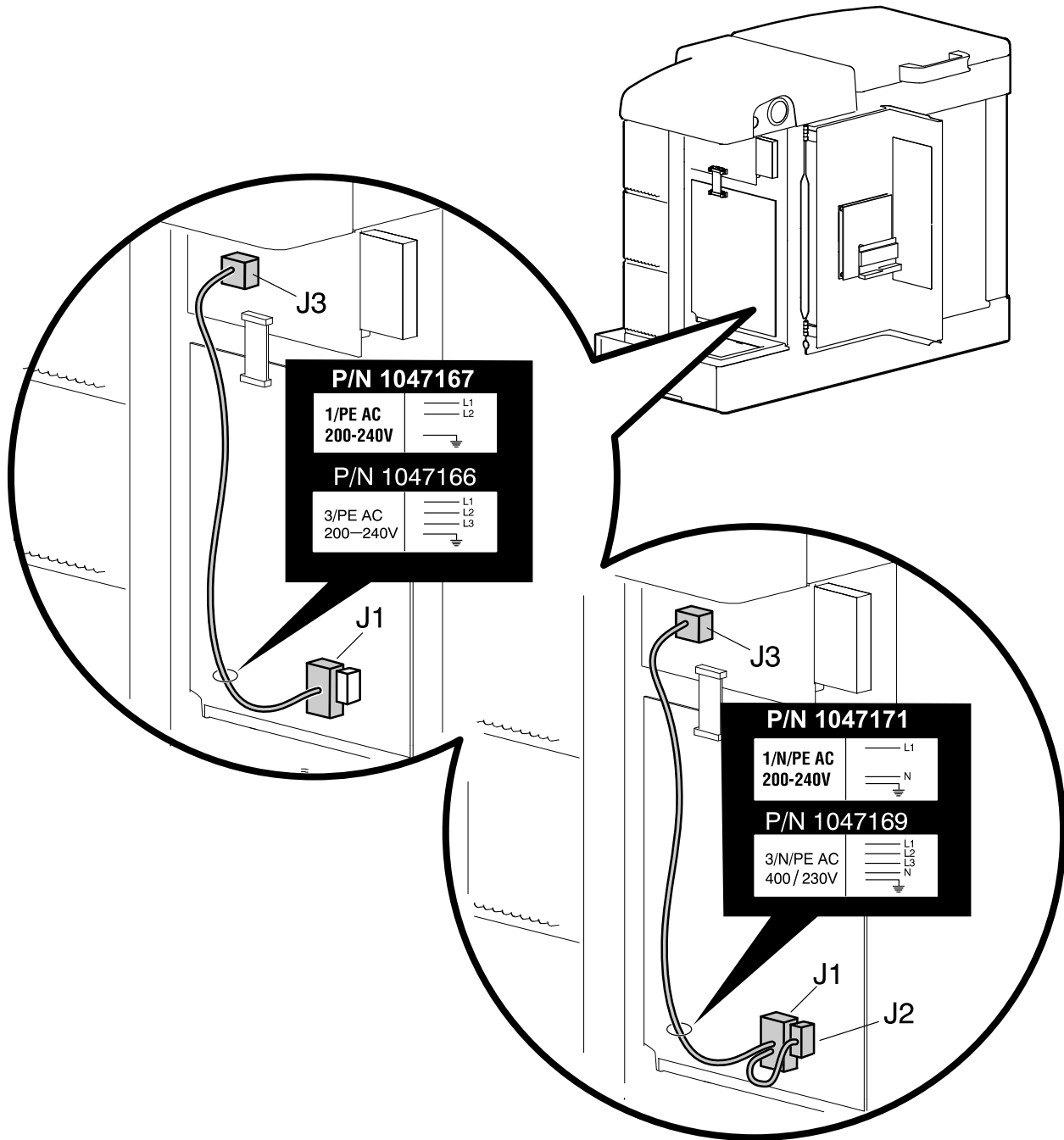


Figure 3-6 Connecting a voltage plug

Connecting a Pump Control Signal

If your melter contains a single-acting pump, you must provide an external 24 VDC/5.4 W control signal (such as a solenoid valve, microswitch, photocell, timer, etc.) to control the stroke of the pump.

Pump Control Guidelines

- Applications using a single-acting pump should process no more than 24 products per minute.
- To ensure that the volume of adhesive dispensed is consistent from stroke to stroke, the pump must be energized for at least 1 s before the the applicators are opened.
- The time to fill the pump (upstroke) is approximately 1.72 s. The pump displacement (downstroke) is 36 cc/stroke.
- The pump piston remains in the up position when no pump control signal is present.

To connect the pump control signal

1. Route the 24 VDC signal wire through an unused conduit knock-out on the melter sub-base bottom or side of the melter. Provide an appropriate strain relief to protect the wire from damage.

See Figure 3-7.

2. Connect the signal wire to the pump control terminal block on the floor of the electrical enclosure.

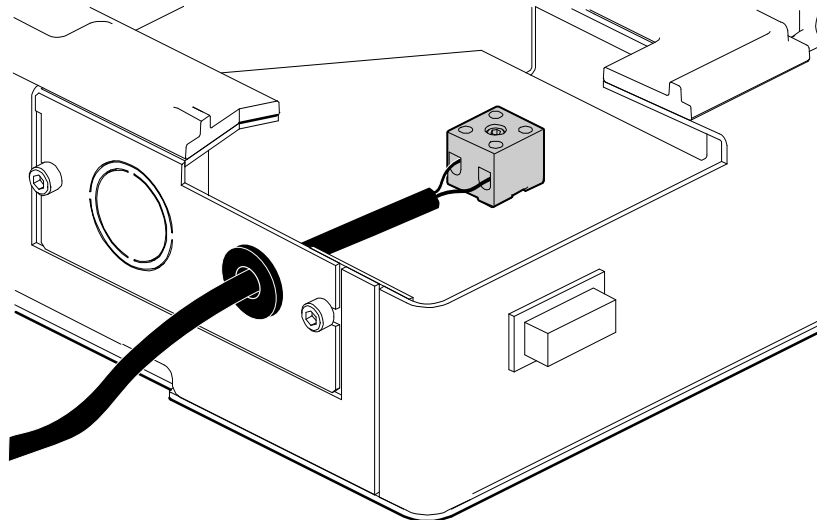


Figure 3-7 Connecting the 24 VDC pump control signal

Connecting a Compressed Air Supply

CAUTION! Do not force the air pressure adjustment screw beyond its normal range of adjustment. Forcing the adjustment screw beyond its normal range of adjustment will damage the pneumatic assembly.

To connect an air supply

1. Use a 5 mm hex wrench to turn the pressure adjustment screw counterclockwise until it stops (off).

See Figure 3-8.

2. Insert the male fitting located on the outlet side of the air filter (P/N 1023267) into the air inlet port on the back of the melter.

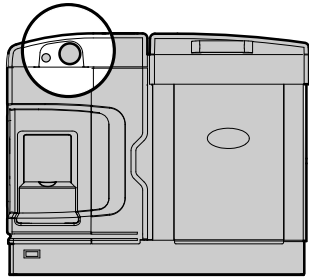
CAUTION! Rigidly support the plant air supply before connecting it to the air filter.

3. Connect a regulated plant air supply to the inlet of the air filter. If required, use the $\frac{1}{4}$ NPTF-to-G $\frac{1}{4}$ BSPP male adapter fitting (P/N 1034145) that is provided in the installation kit.

NOTE: The air filter inlet is threaded to receive a male G $\frac{1}{4}$ BSPP fitting.

4. Open the plant air supply to the melter.
5. Turn the pressure regulator adjustment clockwise to set the melter's operating air pressure (pressure supplied to the pump) to 1.4 bar (20 psi). The operating air pressure should be adjusted later to meet the requirements of the manufacturing process.

NOTE: The minimum operating air pressure is 0.7 bar (10 psi). Operating the melter with the air pressure set to less than 0.7 bar (10 psi) may cause the pump to function erratically.



Pressure regulator and adjustment screw

P/N 1034145

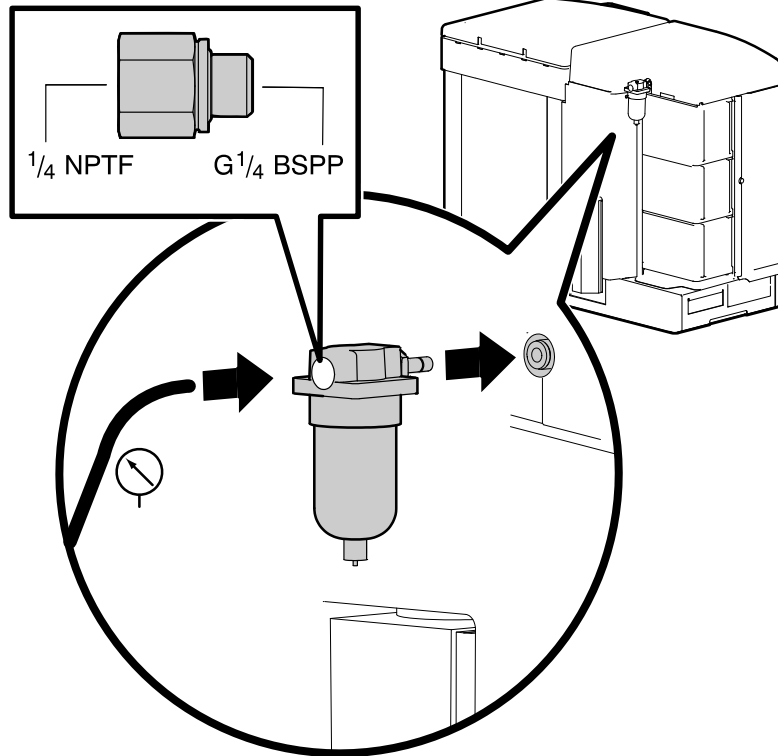
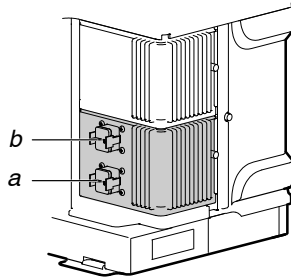


Figure 3-8 Connecting the air filter and the plant air supply line

Connecting Hoses and Applicators

ProBlue melters use standard Nordson hoses and applicators. A maximum of six hose/applicator pairs may be connected to the melter (with three hose/applicator power modules installed).



Hose/applicator module 1
a) Receptacle 1 b) Receptacle 2

The hose/applicator capacity of each melter is determined by the number of hose/applicator modules installed on the melter. Each hose/applicator module supports the connection of two hose/applicator pairs. The hose/applicator capacity of melters that were ordered with less than their full hose/applicator capacity can be increased by adding additional hose/applicator modules. Unused hose/applicator module positions are covered by blank modules.

WARNING! Risk of fire or equipment damage. Before connecting hoses and applicators to the melter, confirm that the power required by each hose/applicator pair and each hose/applicator module, does not exceed the maximum wattages specified in Appendix A, Table A-2, *Maximum Allowable Wattages*.



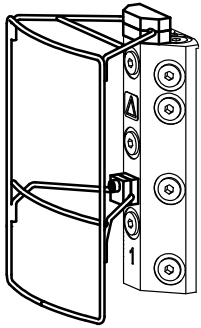
To connect hoses

See Figure 3-9.

Observe the following guidelines:

- For information about choosing the correct Nordson hot melt hose for your manufacturing process, refer to the latest edition of Nordson's hot melt dispensing equipment *Replacement Parts Catalog* or contact your Nordson representative.
- Refer to the user's guide provided with each Nordson hose. The guide contains important information about routing and installing the hose.
- Always use hose port 1 first. The position of port 1 is stamped on the face of the manifold.
- If you install an additional hose/applicator module, you must restart the melter and enter a set-point temperature for each hose/applicator that you connect to the new module in order for the new hoses/applicators to be recognized.

CAUTION! Failure to connect a hose to port 1 may create spaces within the manifold where hot melt will not circulate. The presence of these spaces can result in the build-up of hot melt char, which can lead to an increase in the frequency of melter maintenance.



6-hose manifold guard

- Install the manifold guard (PN 1031871) that is provided in the installation kit. Instructions for installing the guard are provided with the guard.
- Coordinate the connection of each hose with the receptacles on each hose/applicator module. For example, connect the cordset from the hose that is connected to port 1 (marked) to receptacle 1.
- Save all of the port plugs removed from the manifold. A port plug will need to be reinstalled into the manifold if a hose is later removed.
- Use the the 45- or 90-degree hose fittings provided in the installation kit.

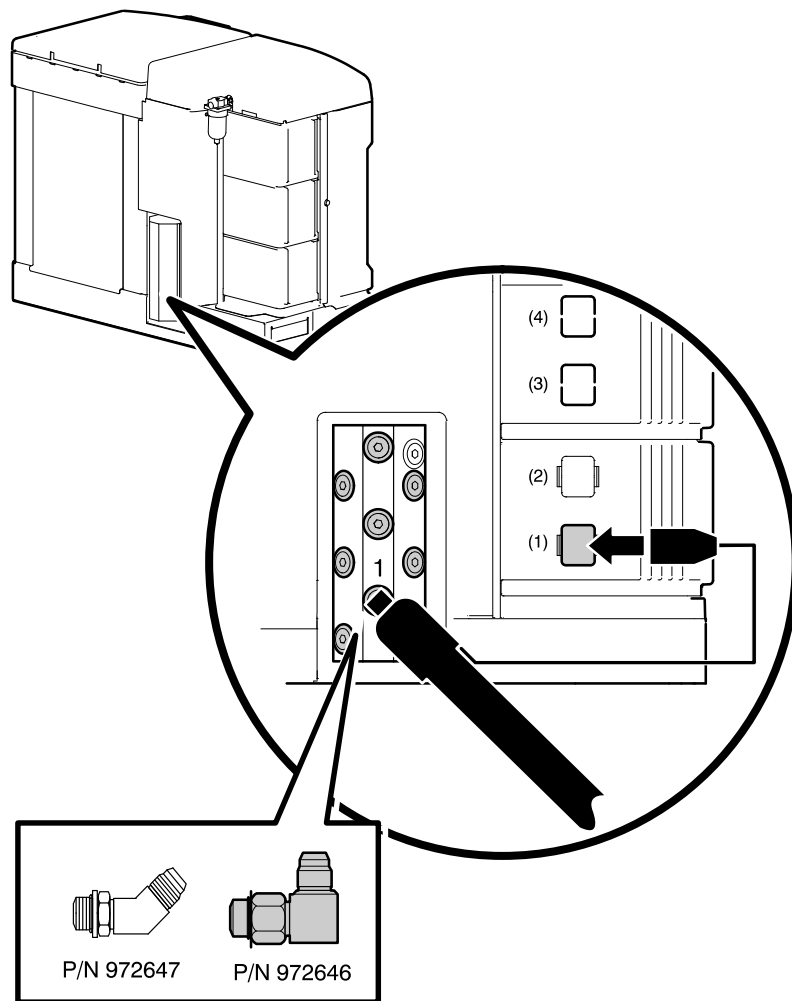
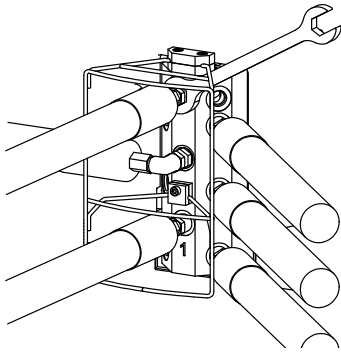


Figure 3-9 Connecting a hose

Connecting Hoses and Applicators *(contd)*



Hose routing options

Hose Routing Options

The unique angled design of the manifold allows each hose (six hoses maximum) to be routed in the same or different directions without interfering with each other. Use the 45- or 90-degree hose fitting supplied with the melter. Additional 45-degree, 90-degree, and straight fittings may be ordered to customize your hose configuration.

To connect applicators

Observe the following guidelines:

- ProBlue melters support all T-style hand-held applicators.
- For information about choosing the most appropriate Nordson hot melt applicator for your manufacturing process, refer to the latest edition of Nordson's hot melt dispensing equipment *Replacement Parts Catalog* or contact your Nordson representative. Refer to Appendix A, *Calculating Melter Power Requirements*, for information about how to calculate the power required by Nordson hot melt applicators.
- Refer to the user's guide that is shipped with each applicator for information about installing the applicator and connecting a hose to the applicator.

NOTE: ProBlue melters are shipped with a 100-mesh (.15 mm) hot melt filter installed in the pump. Order the appropriate applicator nozzle based on this filter mesh size.

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Setting Up the Melter

After physically installing the melter, it must be set up to support your manufacturing process. Melter setup consists of enabling or making changes to factory-set operating parameters that affect the use and function of the melter. The operating temperature (set-point) of the tank and each hose and applicator is also established during melter setup.

The melter is shipped from the factory with the most commonly used operating parameters already set up. The factory setup can be modified at any time to suit your manufacturing process.

Quick Setup

Table 3-4 describes the most commonly used operating parameters and their factory settings. Review the table to determine if the factory settings for each parameter will support your manufacturing process. If the default values for each of these operating parameters are appropriate for your manufacturing process, then no melter setup is required. Go directly to *Set-point Temperature of the Tank, Hoses, and Applicators* later in this section to complete the installation process.

If you need to make changes to the factory setup or if you want to learn about other operating parameters, go to the next part in this section, *Operating Parameters*.

Table 3-4 Common Operating Parameters

Parameter	Parameter Name	Purpose	Default Value
4	Ready Delay Time	A timer that delays the activation of the ready LED for a pre-defined time period after the tank, hoses, and applicators are at the desired set-point temperature. The ready delay timer will only activate if the temperature of the tank, at the time the melter is turned on, is below its assigned set-point temperature by 27 °C (50 °F) or more.	0 minutes
5	Service Interval Time	A timer that turns on a service LED when the value set for the timer equals the number of hours that the heaters have been on. The service LED is used to signal the need for maintenance.	500 hours
8	Automatic Pump On	Determines whether the pump will turn on automatically when the all components are at their desired set-point temperature (enabled) or whether the pump must be turned on manually (disabled).	Enabled
11	Create Password	Sets a password that must be entered before any melter operating parameter or set-point temperature can be changed.	5000
20	Temperature Units	Sets the units of the temperature display to degrees Celsius (C) or to degrees Fahrenheit (F).	C
21	Over Temperature Delta	Sets the number of degrees that any heated component can exceed its assigned set-point temperature before an over temperature fault occurs.	15 °C (25 °F)
22	Under Temperature Delta	Sets the number of degrees that any heated component can drop below its assigned set-point temperature before an under temperature fault occurs.	25 °C (50 °F)
23	Standby Delta	Sets the number of degrees that the temperature of all heated components will be decreased when the melter is placed into the standby mode.	50 °C (100°F)
26	Manual Standby Time	Sets the amount of time the melter will remain in the standby mode after the standby key is pressed.	Disabled
50 to 77	Seven-day Clock	A group of parameters that control the melter's clock. The clock is used to automatically turn the heaters on and off and to place the melter into the standby mode.	Disabled

Operating Parameters

The melter uses operating parameters to store noneditable and editable values. Noneditable values are those that provide information about the historical performance of the melter. Editable values are either a numeric set-point or a control option setting. Control options settings affect the display of information or the function of the melter.

Operating parameters are stored in the melter's firmware in the form of a sequentially numbered list. The list is organized into the logical groups described in Table 3-5.

Table 3-5 Parameter Groups

Group	Parameter Numbers	Group Description
Standard	0 to 11, 14, 19	Noneditable and other frequently used parameters
Temperature Control	20 to 28	Control heaters
Input Setup	30 to 39	Configure the standard and optional inputs
Output Setup	40 to 46	Configure the standard and optional outputs
Seven-day Clock	50 to 77	Configure the clock feature
PID Selection	80 to 77, 88 to 91	Configure the PID selection

In addition to the ability to read and edit parameter values, you can also save and restore the current value of every operating parameter and review a log of the last ten changes that were made to editable parameters.

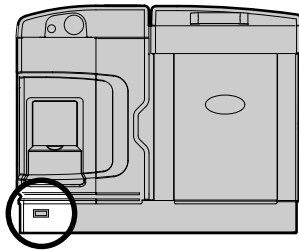
Selecting Operating Parameters

Table 3-6 provides a complete list of the operating parameters. Review the list to determine which operating parameters would best support your manufacturing process. Refer to Appendix B, *Operating Parameters*, for detailed information about each parameter. Appendix B contains a complete description of each parameter, including its affect on the melter, default value, and format.

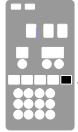
NOTE: Parameters that are used to configure optional equipment or that are otherwise reserved in the firmware are excluded from Table 3-6 and Appendix B.

Reading or Editing Operating Parameters

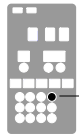
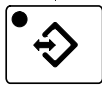
Regardless of whether a parameter's value is editable or not, the procedure for accessing each parameter in order to read or edit its current value is the same.



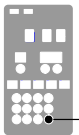
Melter control switch (On/Off)



Setup key



Clear/Reset key



Enter key

**To read or edit a parameter**

1. Switch the melter on.

The melter performs a start-up check.

2. Press the **Setup** key.

The left display flashes parameter 1.

3. Use the numeric keypad to enter the number of the desired parameter. Refer to Table 3-6 for a complete list of parameters.

NOTE: If you incorrectly enter the parameter number, press the **Clear/Reset** key to return to parameter 1 and then re-enter the correct parameter number.

When you have finished entering the one- or two-digit parameter number, the right display indicates the parameter's current value.

4. Do *one* of the following:

- If the value is noneditable, refer to Section 4, *Monitoring the Melter*.
- If the value is editable go to step 5.

5. Press the **Enter** key.

The right display flashes.

6. Use the keypad to enter the desired numeric set-point or control option into the right display. Refer to Appendix B for information about the numeric value or control option choices for each parameter.

NOTE: If the keypad has no affect on the right display, the melter is password protected. You must enter a valid password before you can edit parameters. Refer to Section 4, *Enter the Melter Password*.

7. Press the **Enter** key.

The melter checks that the new value or control option is acceptable.

- If the numeric set-point or control option is accepted, the left and right displays index to the next sequential parameter number and value.
- If the numeric set-point or control option is not accepted, the right display will indicate dashes (---) for three seconds and then it will change back to the original value.

8. Repeat step 5 through step 7 to read or change the next sequential parameter number or press the **Setup** key to exit the setup mode.

Operating Parameters (contd)

Table 3-6 Operating Parameters

Parameter	Name	Range of Values	Default Value
<i>Standard</i>			
0	Enter Password	0 to 9999	4000
1	Total Hours with Heaters On (noneditable)	0-999,999	0
2	Fault Log (noneditable)	—	_ -F0 (empty)
3	Change History Log (noneditable)	—	P- _ (empty)
4	Ready Delay Time	0 to 60 minutes	0 minutes
5	Service Interval Time	0 to 8736 hours	500 hours
6	Service LED Heater Hours	0 to 9999 hours	0
8	Automatic Pump On	0 (disabled) or 1 (enabled)	1 (enabled)
9	Automatic Pump On Temperature	0 (disabled) or (1 to 230 °C)	0 (disabled)
10	Enable or Disable Password	0 (disabled) or 1 (enabled)	0 (disabled)
11	Create Password	0 to 9999	5000
14	External Communications Lock-out	0 or 1	0 (disabled)
19	Automatic Heaters On	0 or 1	1 (enabled)
<i>Temperature Control</i>			
20	Temperature Units (degrees °C or °F)	C (degrees Celsius) or F (degrees Fahrenheit)	C (degrees Celsius)
21	Over Temperature Delta	5 °C (10 °F) to 60 °C (110 °F)	15 °C (25 °F)
22	Under Temperature Delta	5 °C (10 °F) to 60 °C (110 °F)	25 °C (50 °F)
23	Standby Delta	5° C (10° F) to 190° C (350°F)	50 °C (100 °F)
24	Automatic Standby Timeout	0 to 1440 minutes	0 (disabled)
25	Automatic Heaters Off Time	0 to 1440 minutes	0 (disabled)
26	Manual Standby Time	0 to 180 minutes	0 (disabled)
27	Hose Standby Delta	0, 5°C (10°F) to 190° C (350°F)	0 (disabled)
28	Applicator Standby Delta	0, 5°C (10°F) to 190° C (350°F)	0 (disabled)
<i>Input Setup</i>			
30	Standard Input 1	0-10, 15-16, 21-28	10 (Automatic Standby)
31	Standard Input 2	0-9, 15-16, 21-28	1 (Standby on/off)
32	Standard Input 3	0-9, 15-16, 21-28	2 (Heaters on/off)
33	Standard Input 4	0-9, 15-16, 21-28	4 (Hose/applicator 1 enable/disable)
34	Optional Input 5	0-9, 15-16, 21-28, 31	0 (disabled)
<i>Continued...</i>			

Table 3-6 Operating Parameters (*contd*)

Parameter	Name	Range of Values	Default Value
35	Optional Input 6	0-9, 15-16, 21-28, 31	0 (disabled)
36	Optional Input 7	0-9, 15-16, 21-28, 31	0 (disabled)
37	Optional Input 8	0-9, 15-16, 21-28, 31	0 (disabled)
38	Optional Input 9	0-9, 15-16, 21-28	0 (disabled)
39	Optional Input 10	0-9, 15-16, 21-28	0 (disabled)
<i>Output Setup</i>			
40	Standard Output 1	0-6, 9-10	1 (Ready)
41	Standard Output 2	0-6, 9-10	3 (Fault)
42	Standard Output 3	0-6, 9-10	4
43	Optional Output 4	0-6, 9-10	0 (disabled)
44	Optional Output 5	0-6, 9-10	0 (disabled)
45	Optional Output 6	0-6, 9-10	0 (disabled)
46	Optional Output 7	0-6, 9-10	0 (disabled)
<i>Seven-day Clock</i>			
50	Current Day	1 to 7 (1 = Monday)	—
51	Current hour	0000 to 2359	—
55	Schedule 1 Heaters On	0000 to 2359	06:00
56	Schedule 1 Heaters Off	0000 to 2359	17:00
57	Schedule 1 Enter Standby	0000 to 2359	—:—
58	Schedule 1 Exit Standby	0000 to 2359	—:—
60	Schedule 2 Heaters On	0000 to 2359	—:—
61	Schedule 2 Heaters Off	0000 to 2359	—:—
62	Schedule 2 Enter Standby	0000 to 2359	—:—
63	Schedule 2 Exit Standby	0000 to 2359	—:—
65	Schedule 3 Heaters On	0000 to 2359	—:—
66	Schedule 3 Heaters Off	0000 to 2359	—:—
67	Schedule 3 Enter Standby	0000 to 2359	—:—
68	Schedule 3 Exit Standby	0000 to 2359	—:—
71	Schedule for Monday	0-7	0
72	Schedule for Tuesday	0-7	0
73	Schedule for Wednesday	0-7	0
74	Schedule for Thursday	0-7	0
75	Schedule for Friday	0-7	0
76	Schedule for Saturday	0-7	0
77	Schedule for Sunday	0-7	0
<i>PID Selection</i>			
80-84	PID Selection for Hose/Applicator Receptacles 1, 2, 3, and 4	0-3	0 or 1 depending on the channel type (hose or applicator)
88-91	PID Selection for Hose/Applicator Receptacles 5, 6, 7, and 8	0-3	0 or 1 depending on the channel type (hose or applicator)

Operating Parameters (contd)



You can exit the setup mode at any time by pressing the **Setup** key.

Parameter numbers that are not applicable are skipped when you scroll through the operating parameter list in the left display.

When the right display is flashing, you can quickly set the value of the current parameter to its lowest possible value by simultaneously pressing both of the right-display scroll keys.

While in the setup mode, if no key is pressed for two minutes, the melter will return to the automatic scan mode.

You can also use the right-display scroll keys to enter or change a parameter's value or control option. After entering the parameter's number in the left display, press either of the right-display scroll keys to change the value or control option.

If password protection is enabled, the melter will return to the password protected mode whenever you exit the setup mode.

Appendix B, *Parameter 10*

Set-point Temperature of the Tank, Hoses, and Applicators

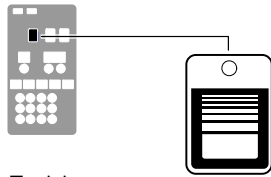
The melter is shipped from the factory with the tank set-point temperature at 175 °C (350 °F) and the hose and applicator set-point temperatures at 0 degrees (turned off).

Before the melter can be used, a set-point temperature must be assigned to the tank, hoses, and applicators. Assign set-point temperatures using any of the following methods:

- **Global**—The tank and all hoses and applicators are set to the same set-point temperature.
- **Global-by-component group**—All of the hoses or all of the applicators are set to the same set-point temperature.
- **Individual Component**—The set-point temperature of the tank and each hose and applicator is set individually.

Since most manufacturing processes will require the tank, hoses, and applicators to be set to the same temperature, only the global method of assigning set-point temperatures is described in this section. For information about the other two methods of assigning set-point temperatures, refer to Section 4, *Adjusting Component Temperatures*.

As with operating parameters, you can also save and restore set-point temperatures and review past changes that were made to set-point temperatures.



Tank key

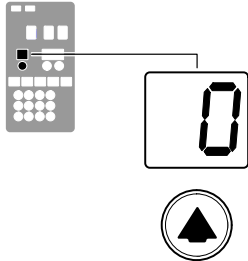
To assign a global set-point temperature

1. Press and hold the **Tank** key for three seconds.

The left display flashes 1.

2. Scroll the left display to 0.

The right display indicates all dashes (---) and the LEDs on the tank, hose, and applicator keys turn green.

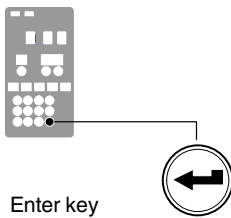
Left display and
scroll key

3. Press the **Enter** key.

The right display flashes.

4. Use the numeric keypad to enter the set-point temperature recommended by the manufacturer of the hot melt.

Refer to the technical data sheet provided by the manufacturer of the hot melt to determine the optimal set-point temperature.

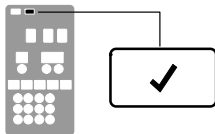


Enter key

5. Press the **Tank** key.

Each component begins to heat or cool to the new global set-point temperature and the melter returns to the automatic scan mode.

When all of the components reach the global set-point temperature, the ready LED turns on (green).

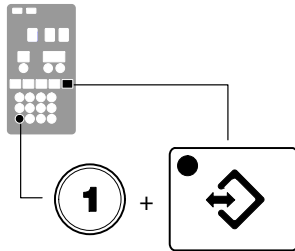


Ready LED

Save and Restore Melter Settings

The current value of all editable operating parameters and the set-point temperature of each component can be saved and, if necessary, restored at a later time. When saved settings are restored, they overwrite the settings that are presently in use.

This save-restore feature is useful in instances where the settings that are in use are deliberately or accidentally changed and you need to return the melter to its pre-change setup.

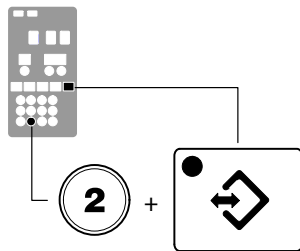


Saving current settings

To save current settings

With the melter in the automatic scan mode, simultaneously press the number **1** key and the **Setup** key.

S-1 appears momentarily in the right display.



Restoring saved settings

To restore saved settings

CAUTION! All melter settings will be deleted! Before restoring saved settings, ensure that use of the restored settings will not disrupt the current process or create an unsafe operating condition.

With the melter in the automatic scan mode, simultaneously press the number **2** key and the **Setup** key.

S-2 appears momentarily in the right display.



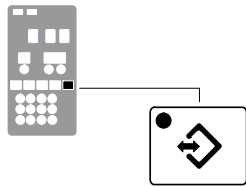
If you use the restore feature before the save feature is used for the very first time, the factory default set-point temperatures will be restored. This will cause the hoses and applicators to stop heating.

You can transfer melter settings from one melter to another using the Nordson Configuration Manager software utility.

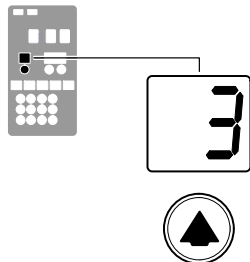
Refer to Appendix C,
Melter Communications

Review Parameter and Set-point Temperature Changes

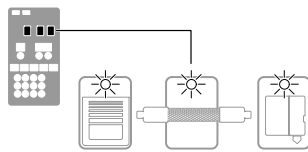
The melter stores in a change history log, a record of the last ten changes that were made to either operating parameters or set-point temperatures. Since the log only stores ten changes, old log entries are overwritten beginning with the first log entry, by the eleventh and following log entries.



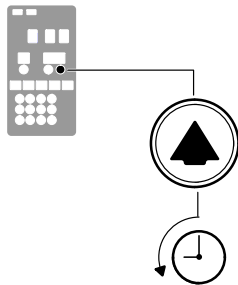
Setup key



Left display and scroll key



Component key LEDs



Scrolling through the log

To review the change history log

1. Press the **Setup** key.

Operating parameter 1 flashes in the left display.

2. Press the left display scroll key to change the display to parameter 3 (the change history log).

The following occurs:

- If the last change was to an editable parameter, all of the component key LEDs remain off.
or
- If the last change was to a set-point temperature, the LED on the associated component key(s) turns on.
and
- The right display indicates the four-digit log entry associated with the *last* change that was made.

Table 3-7 provides the meaning, from left to right, of each digit in the log entry. Following the table are two example log entries.

3. Press the right-display scroll key to review each of the remaining nine log entries. Each press of the scroll key displays a progressively older log entry.
4. Press the **Setup** key to return to the automatic scan mode.

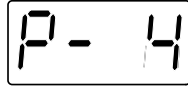
Table 3-7 Change History Log

First Digit	Second Digit	Third and Fourth Digits			
P (Parameter)	-	<i>Indicates the number of the parameter that was changed</i>			
S (Set-point)		<i>Are used in conjunction with the LEDs on the component keys to indicate the location and method of a set-point temperature change.</i>			
		When this LED is on..	And the Fourth Digit Indicates..	The change was to..	And the Method of Change was..
		Tank Key	1	The tank	Individual
		Hose Key	1– 6	A single hose	Individual
		applicator Key	1– 6	A single applicator	Individual
		All Keys	0	All components	Global
		Hose Key	0	All hoses	Global-by-component
		applicator Key	0	All applicators	Global-by-component

Review Parameter and Set-point Temperature Changes (contd)

Change History Log Examples

Example 1:



Parameter 4 (ready delay) was changed.

Example 2:



If the LED on the applicator key is on, then this display would indicate that the global-by-component method was used to change the temperature of the applicators.



Unused log entries in the change history log are indicated by "P-_" in the right display.

To view how many heater hours have elapsed since a specific change (displayed) was made, simultaneously press both of the right-display scroll keys.

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Installing Melter Inputs

ProBlue melters are equipped with four standard inputs. Each input is customer-wired to the melter and then set up to provide one of the following control options:

- Place the melter into the standby mode
- Turn the heaters on and off
- Enable or disable a specific hose or applicator
- Turn the pump on and off

Inputs are activated using a constant 10 to 30 VDC signal voltage, which is supplied by the customer's control equipment. The inputs are not polarity sensitive.



WARNING! The operator can override the melter inputs by using the control panel function keys. Ensure that the control logic for any external device that sends an input signal to the melter is programmed to prevent the creation of an unsafe condition in the event that the operator overrides an external input to the melter.

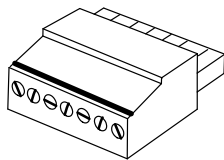
To wire inputs to the melter

1. Route a 2-, 4, 6, or 8-conductor signal cable from the control equipment to the melter, and through the PG-16 penetration in the sub-base. Use rigid or flexible conduit or a suitable strain relief to protect the cable from the sharp edge of the conduit penetration.

NOTE: Use a signal cable suitable for NEC class1 remote control and signaling circuits. To reduce the possibility of electrical shorting, route the cable so that it does not touch nearby circuit boards.

See Figure 3-10.

2. Connect each pair of input wires to the appropriate terminals (8 through 14) on connector P/N 277909. If input number four is used, terminal 7 on connector P/N 227908 must also be used. Both connectors are provided in the installation kit. Table 3-8 lists the terminal numbers that correspond to each input.



Connector P/N 277909

NOTE: Connector P/N 277909 is physically keyed to prevent it from being used in place of connector P/N 277908, which has terminals numbered 1 through 7.

3. Plug the connector (P/N 277909) into the bottom receptacle of terminal TB2, which is located on the right side of the main board. If input number four is used, plug connector P/N 277908 into the top receptacle on terminal TB2.

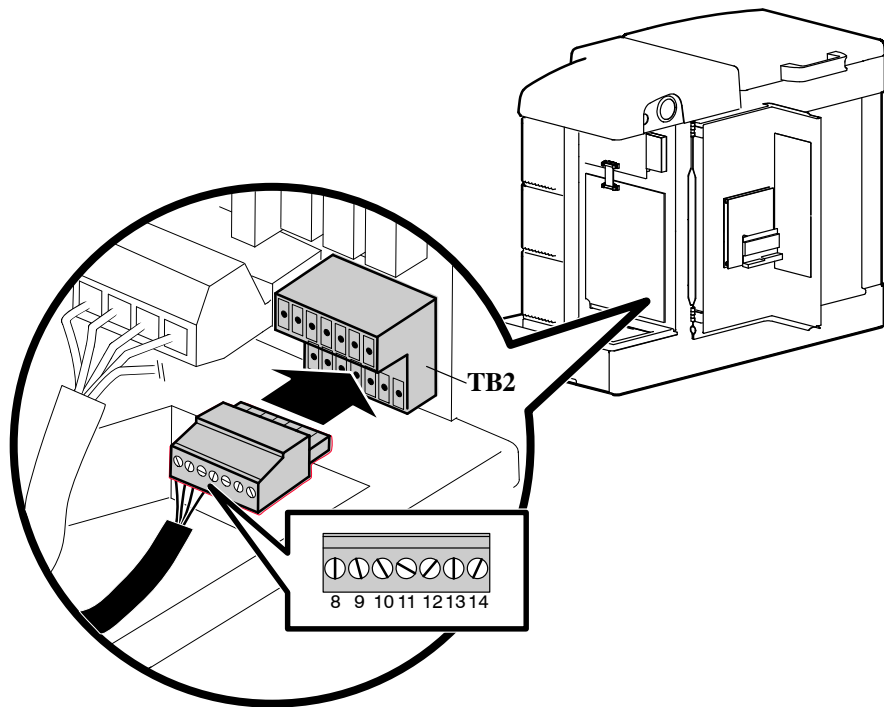


Figure 3-10 Wiring inputs

To set up an input

Set up the parameter control option for each input that you connected to the melter. Table 3-8 list the available control options. Refer to *Setting Up the Melter*, earlier in this section for information about how to select operating parameters and edit parameter control options.



With the exception of the pump enable/disable control option (Table 3-8), All inputs are transition-based.

Appendix B, *Input Setup*

The input capacity of the melter may be increased from four inputs to a total of ten inputs by adding an optional I/O card that is available from Nordson Corporation.

Section 7, *Parts*

Table 3-8 Input Data

Input	Terminals	Operating Parameter	Control Option	Note
<i>Standard Inputs</i>				
1	8 and 9	30	0 - Input Disabled 1 - Standby On/Off 2 - Heaters On/Off 3 - Pump Enable/Disable 4 - Hose/Applicator 1 Enable/Disable 5 - Hose/Applicator 2 Enable/Disable 6 - Hose/Applicator 3 Enable/Disable 7 - Hose/Applicator 4 Enable/Disable 8 - Hose/Applicator 5 Enable/Disable 9 - Hose/Applicator 6 Enable/Disable 10 - Automatic standby (Default) 15 - Hose/Applicator 7 Enable/Disable (if present in system) 16 - Hose/Applicator 8 Enable/Disable (if present in system) 21 - Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 22 - Hose/Applicator 2 Standby On/Off 23 - Hose/Applicator 3 Standby On/Off 24 - Hose/Applicator 4 Standby On/Off 25 - Hose/Applicator 5 Standby On/Off 26 - Hose/Applicator 6 Standby On/Off 27 - Hose/Applicator 7 Standby On/Off (if present in system) 28 - Hose/Applicator 8 Standby On/Off (if present in system)	A C F D

2	10 and 11	31	0 - Input Disabled 1 - Standby On/Off (Default) 2 - Heaters On/Off 3 - Pump Enable/Disable 4 - Hose/Applicator 1 Enable/Disable 5 - Hose/Applicator 2 Enable/Disable 6 - Hose/Applicator 3 Enable/Disable 7 - Hose/Applicator 4 Enable/Disable 8 - Hose/Applicator 5 Enable/Disable 9 - Hose/Applicator 6 Enable/Disable 15 - Hose/Applicator 7 Enable/Disable (if present in system) 16 - Hose/Applicator 8 Enable/Disable (if present in system) 21 - Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 22 - Hose/Applicator 2 Standby On/Off 23 - Hose/Applicator 3 Standby On/Off 24 - Hose/Applicator 4 Standby On/Off 25 - Hose/Applicator 5 Standby On/Off 26 - Hose/Applicator 6 Standby On/Off 27 - Hose/Applicator 7 Standby On/Off (if present in system) 28 - Hose/Applicator 8 Standby On/Off (if present in system)	A, C F
3	12 and 13	32	Same as parameter 31 (Default=2)	A, C, F
4	7 and 14	33	Same as parameter 31 (Default=4)	A, C, F
<i>Optional Inputs</i>				
5	11 and 12	34	0 (Disabled)	E, B, G
6	13 and 14	35	0 (Disabled)	E, B, G
7	15 and 16	36	0 (Disabled)	E, B, G
8	17 and 18	37	0 (Disabled)	E, B, G

9	19 and 20	38	0 (Disabled)	E, B
10	9 and 10	39	0 (Disabled)	E, B
NOTE A: Parameter 30 has 10 control options. parameters 31, 32, and 33 each have only 9 control options. B: Parameters 34 through 39 are reserved for the six inputs created when the optional I/O expansion card is installed. The six optional inputs have the same control options as parameter 31. C: If control option 3 is selected, the pump will not turn on—even if you press the pump key—if voltage is not present on the input's contacts. Also, see note G. D: If control option 10 is selected for input 1, a time must be set in parameter 24. E: Refer to the instruction sheet provided with the optional I/O expansion card for wiring information. F: When the 8-Hose/Applicator Expansion option is installed, the option for Hose/Applicator 7 or 8 Enable/Disable appear as options 15 and 16 respectively. G: Can be used to remotely select ATS recipes 1-15. Control option 31 must be entered for parameters 34, 35, 36, and 37 (optional inputs 5-8) for ATS remote recipe recall. Optional input 5=LSB; optional input 8 = MSB. ATS remote recipe recall is disabled when optional inputs 5-8 are deenergized.				

Installing Melter Outputs

The melter is equipped with three user-configurable outputs. Outputs are used to communicate with user-supplied production equipment or control hardware, such as a programmable logic controller.

Each output is customer-wired and then set up in the melter's firmware to provide one of the following outputs:

- The melter is ready
- The melter is ready *and* the pump is on
- A fault has occurred
- The hot melt level is low
- The service LED is on
- A potential fault is detected

All outputs contacts are rated at 240 VAC 2 A or 30 VDC 2 A. All contacts are normally open when the melter is turned off.

To connect an output to the melter

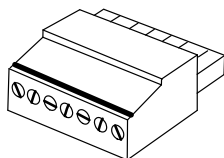
See Figure 3-11.

1. Route a 2-, 4, or 6-conductor signal cable from the control equipment to the melter, through the PG-16 penetration on the floor of the electrical compartment. Use rigid or flexible conduit or a suitable strain relief to protect the cable from the sharp edge of the conduit penetration.

NOTE: Use a signal cable suitable for NEC class1 remote control and signaling circuits. To reduce the possibility of electrical shorting, route the cable so that it does not touch nearby circuit boards.

2. Connect each pair of output wires to the appropriate terminals (1 through 7) on connector P/N 277908. The connector is provided in the installation kit. Table 3-9 lists the terminal numbers that correspond to each output.

NOTE: Terminal number 7 on connector P/N 277908 is reserved for input number four. Connector P/N 277908 is physically keyed to prevent it from being used as connector P/N 277909, which has terminals numbered 8 through 14.



Connector P/N 277908

3. Plug connector P/N 277908 into the top receptacle on terminal TB2, which is located on the main board.

To connect an output to the melter (contd)

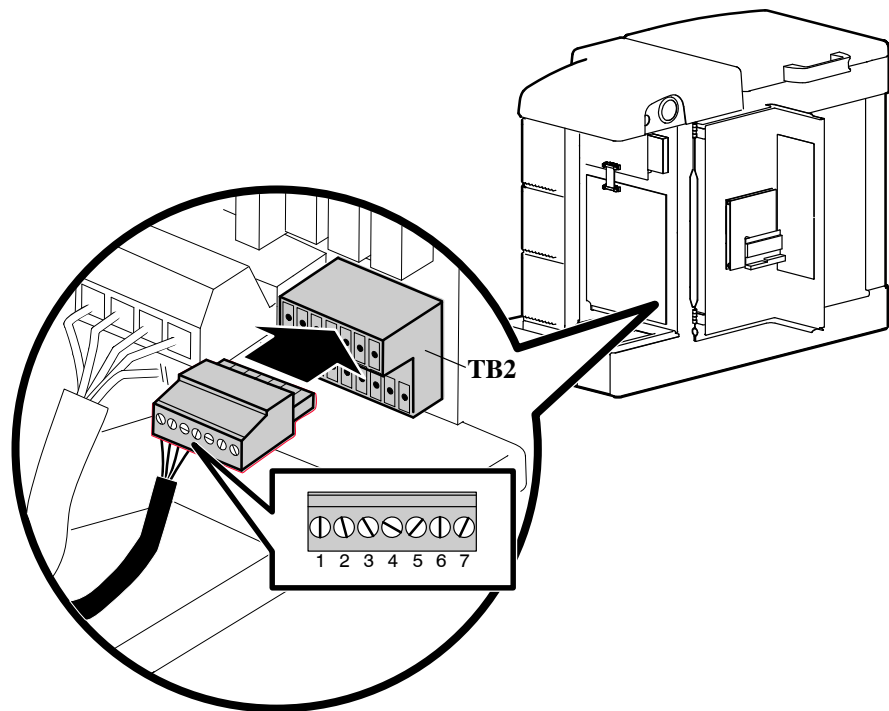


Figure 3-11 Wiring outputs

To set up an output

Set up the parameter control option for each output that you connected to the melter. Table 3-9 lists the available control options. Refer to *Setting Up the Melter*, earlier in this section, for information about how to select operating parameters and edit parameter control options.



The output capacity of the melter may be increased from three outputs to seven outputs by adding an optional I/O expansion card that is available from Nordson Corporation.

Section 7, *Parts*

Table 3-9 Output Data

Output	Terminals	Operating Parameter	Control Options	Note
Standard Outputs				
1	1 and 2	40	0 - Output Disabled 1 - Ready (Default) 2 - Ready <i>and</i> the pump is on 3 - Fault 4 - Tank Low Level 5 - Service LED is On 6 - Alert	A A A B A C
2	3 and 4	41	Same as parameter 40 (Default=3)	
3	5 and 6	42	Same as parameter 40 (Default=4)	
Optional Outputs				
4	1 and 2	43	0 (Disabled)	D
5	3 and 4	44	0 (Disabled)	
6	5 and 6	45	0 (Disabled)	
7	7 and 8	46	0 (Disabled)	
NOTE	A: When control option condition occurs, contacts close. Contacts are normally open when power is off. B: When control option condition occurs, contacts open. Contacts are normally open when power is off. C: Control option 6 provides an output signal when a potential fault is detected. If control option 3 and 6 are both used, then both a fault output and an alert output signal will be present when the fault LED turns on. D: For wiring information, refer to the instruction sheet that is provided with the optional I/O expansion card			

Installing Optional Equipment

Each item of optional equipment is shipped with instructions for installing and operating the equipment. Refer to Section 7, *Parts*, for equipment part numbers.

Connecting a Applicator Driver, Pattern Controller, or Timer

If applicable, complete the melter installation by connecting the applicators to the desired applicator driver, pattern control, or timer. Refer to the product manual provided with the device for information about installing and operating the equipment.

Flushing the Melter

Before using the melter for production, it should be flushed to remove any residue left over from factory-testing. Flushing the melter is accomplished by processing a minimum of one tank volume of hot melt through the melter, hoses, and applicators.

Refer to Section 4, *Operation*, for information about filling the tank and operating the melter.

Setting Up Melter Communications

You can transfer melter settings between melters, and upgrade or downgrade the melters operating firmware by using a personal computer that is connected to your melter's serial port.

Refer to Appendix C, *Melter Communications*, for information about downloading, installing, and using the software that is required to connect a personal computer to your melter.

Section 4

Operation



WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

This section provides information about the following operator-level tasks:

- Filling the melter tank
- Starting the melter
- Monitoring melter operation
- Adjusting the operating temperature of heated components
- Using the melter function keys
- Shutting the melter down

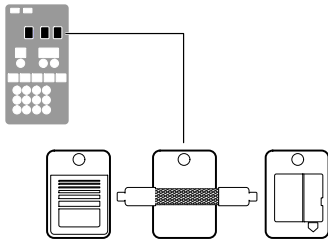
Most of the controls described in this section are located on the control panel behind the keypad door. Refer to Section 2, *Key Components*, for the location of the control panel.

Additional Information



This section presents operating procedures in their most commonly used form. Procedural variations or special considerations are explained in the additional information table that follows most procedures. Where applicable, some table entries also contain cross-reference information. Additional information tables are indicated by the symbol shown to the left.

More about Heated Components



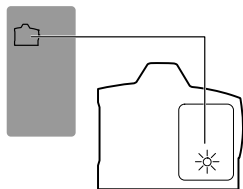
Component keys
(tank, hose, and applicator)

The melter contains three groups of heated components. These are the tank group, which contains the tank and the manifold, the hose group, and the applicator group. Component groups are represented on the control panel by the component keys shown to the left.

Heated components within each group are identified by their position number. The position of the tank and pump is fixed at 1. Hose and applicator position numbers are automatically assigned based on the hose/applicator receptacle they are connected to. For example, the position numbers of a hose/applicator pair that is connected to the second receptacle would be hose position 2 and applicator position 2.

The number of hose/applicator receptacles available on each melter depends on the configuration in which the melter was ordered. ProBlue adhesive melters may have either two, four, or six hose/applicator receptacles.

Filling the Tank



Low-level LED (yellow)

Before filling the tank, confirm that the hot melt material is compatible with the melter. Refer to Section 2, *Intended Use*, for information about hot melt materials that should not be used in ProBlue melters.

The tank is equipped with a low-level float switch. When the volume of adhesive in the tank reaches approximately one-half of the tank's rated capacity, the float switch turns on the low-level LED located on the control panel.



To fill the tank

WARNING! Hot! Risk of burns! Use a scoop to fill the tank with hot melt. Never use your bare hands. Using your bare hands to fill the tank may result in personal injury.

1. Open the tank lid.

See Figure 4-1

2. Use a scoop to fill the tank with hot melt up to the tank fill line. The line is marked on the screen that protects the tank float switch.
3. Close the tank lid when you are finished filling the tank.

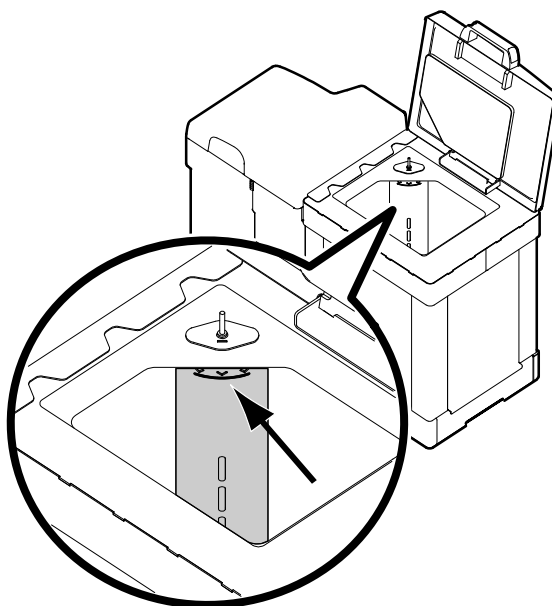


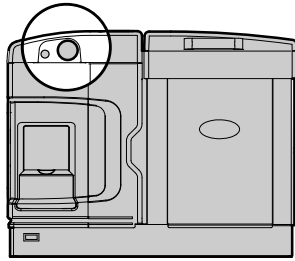
Figure 4-1 Tank fill line

Starting the Melter

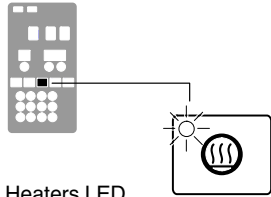
Before starting the melter for the first time, confirm that the

- melter is fully installed including any required inputs and outputs, applicator drivers, pattern controllers, and timers
- melter's operating parameters are set up to support the current manufacturing process

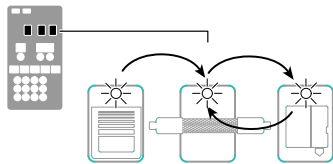
Refer to Section 3, *Installation*, if any of the items listed above are not complete.



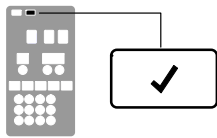
Melter control switch (on/off)



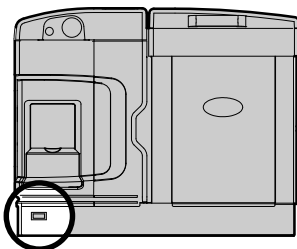
Heaters LED



Automatic scan sequence



Ready LED



Air pressure gauge

To start the melter

1. Switch the melter on.

The melter:

- Tests the control panel LEDs
- Turns on the heaters (the heaters LED turns green)
- Begins to automatically scan through and display the actual temperature of the tank and each hose and applicator that has a set-point temperature that is greater than zero degrees. The sequence of the automatic scan is: tank, each hose and applicator pair, and then back to the tank.
- Turns on the ready LED (green) when the tank and all of the hoses and applicators are within 3 °C (5 °F) of their assigned set-point temperature.

NOTE: Appendix D contains a functional description of a double-acting pump.

2. Check the air pressure gauge on the front of the melter to confirm that the operating air pressure is set correctly.

NOTE: The minimum operating air pressure is 0.7 bar (10 psi). Operating the melter with the air pressure set to less than 0.7 bar (10 psi) may cause the pump to function erratically.

3. Before running the first product, or anytime that a product has not been processed within 5 minutes, cycle the pump to ensure that the pump is filled with adhesive.



If the melter is switched on when the temperature of the tank is 27 °C (50 °F) or greater below its assigned set-point temperature (cold start condition), the ready LED will not turn on until the ready delay (defined when the melter was set up) has elapsed.

Appendix B, *Parameter 4*

The time remaining on the ready delay (in minutes) appears in right display at the end of every scan cycle. When only one minute remains in the ready delay time, the right display counts down in seconds.

Appendix B, *Parameter 4*

You can by-pass the ready delay time by pressing the **Heaters** key twice.

The appearance of F4 in the right display immediately after the melter is switched on indicates a problem with the melter's processor or main board.

Section 4, *Monitor Melter Faults*

The appearance of F1 in the right display immediately after starting the melter indicates that a hose or applicator cordset may be loose or disconnected.

Section 6, *Troubleshooting*

If the melter is set up for manual pump activation, the pump LED will not turn on when the melter is ready.

Appendix B, *Parameter 8*

The condition of one or more inputs, may prevent the heaters from turning on.

Section 3, *Installing Inputs*

If the seven-day clock feature was set up and turned on when the melter was last switched off, the clock will automatically turn on the next time the melter is switched on.

Section 4, *Using Melter Function Keys*

It is normal for a double-acting pump to slowly cycle when no hot melt is being dispensed from the applicators.

If a power failure occurs, the melter will restart in its normal heat-up cycle, even if the heaters were off or the melter was in standby prior to the power failure. If the seven-day clock was on prior to the power failure, the melter will restart in the mode dictated by the clock schedule at the time the melter restarts.

Monitoring the Melter

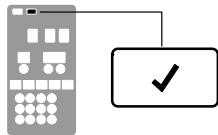
The melter provides indicators that allow you to:

- Quickly confirm that the melter is operating correctly
- Monitor the actual temperature of the manifold and each hose and applicator
- Identify melter faults
- Identify when the level of hot melt in the tank is low
- Check the operating air pressure
- Determine when service is required

The melter automatically determines the number and location of all hoses and applicators that are connected to it. Refer to *More About Heated Components* earlier in this section for information about hose/applicator capacity and the identification of heated components.

You can also use a personal computer to monitor the melter. Refer to Appendix C, *Melter Communications*, for information about connecting a personal computer to the melter and installing the required software.

Confirm that the Melter is Operating Correctly



Ready LED

The ready LED turns on (green) when all of the heated components are within 3 °C (5 °F) of their set-point temperature.

The ready LED will not turn on, or will turn off, if any of the following events occur:

- The ready delay is still counting down.
- The operator or a remote input places the melter in the standby mode.
- The seven-day clock places the melter in the standby mode.
- There is a fault (the fault LED will turn on).

Refer to *Monitoring Melter Faults* and *Using Melter Function Keys* later in this section for information about melter faults and using the seven-day clock and standby functions. Refer to Appendix B, *Parameter 4*, for information about the ready delay.



Heated components with a set-point temperature of zero degrees are skipped during the automatic scan cycle.

The set-point temperature of the tank and the manifold cannot be set independently.

The time remaining on the ready delay appears in the right display at the end of each scan cycle.

Appendix B, *Parameter 4*

You can override the seven-day clock at any time. If the clock has turned the heaters off, pressing the heaters key will turn the heaters back on. If the clock has placed the melter into the standby mode, pressing the standby key will return the heated components to their assigned set-point temperature.

Section 4, *Using Melter Function Keys*

Monitor Component Temperatures

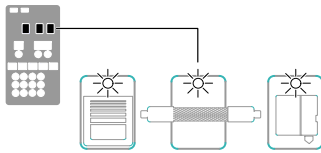
You can check the actual temperature of each heated component—the tank and each hose and applicator—using the automatic scan mode or by manually selecting and checking each component.

By default, the melter remains in the automatic scan mode except when:

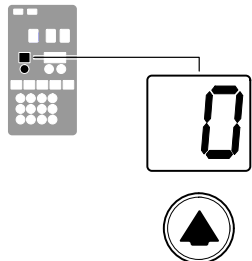
- The melter is placed into the setup mode
- The set-point temperature of all hoses and applicators is set to zero degrees
- A fault occurs

To check component temperatures using the automatic scan mode

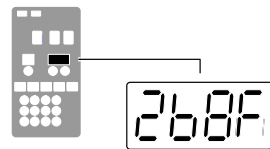
1. When the ready LED is on, observe the LEDs on the component keys.
2. When the LED on the key that represents the desired component group (tank, hose, or applicator) turns on, observe the left display until it indicates the position number of the specific component you want to check.
3. When the position number of the desired component appears in the left display, observe the right display to determine the component's actual temperature.



LEDs on component keys



Left display and scroll key



Component temperature display

To manually check a component's temperature

1. Press the key (tank, hose, or applicator) that represents the component group you want to check.

The automatic scan stops and the left display indicates the number of the first sequential component in the selected component group. The right display indicates the component's actual temperature.

NOTE: When the tank key is pressed, the left display does not indicate a component number (blank display).

2. If the first sequential component is not the component you want to check, use the left-display scroll key to change to the correct component number.

The right display indicates the actual temperature of the selected component.

3. Press the **Setup** key twice to return to the automatic scan mode.

Monitor Component Temperatures (contd)



When you scroll the left display past the number of the last sequential component in a component group, the number of the first sequential component in the next component group appears in the left display.

The melter will return to the automatic scan mode two minutes after the last key is pressed.

When you press the **Tank** key, it is the manifold temperature that is actually indicated in the right display. To check the actual temperature of the tank, simultaneously press the **Tank** key and the left-display scroll key.

The default unit for temperature display is degrees Celsius (C). This may be changed to degrees Fahrenheit using operating parameter 20.

Appendix B, Parameter 20

The LEDs on each component key will change from green to yellow if any component in the component group drops more than 3 °C (5 °F) below its assigned set-point temperature.

You can check the set-point temperature of a component at any time, by pressing the right-display UP scroll key. Holding down the scroll key while the melter is in the automatic scan mode reveals the set-point of each component that is scanned.

Monitor Melter Faults

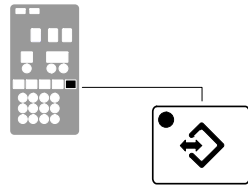
The melter alerts the operator to the faults listed in Table 4-11. Faults affect the melter in one of three ways: the heaters turn off; the heaters remain on, but the fault condition persists; or the melter stops functioning.

When a fault occurs, you must diagnose and correct the fault condition and then place the melter back into operation. You can use the fault log to determine the type, order, and relative time of the last ten faults.

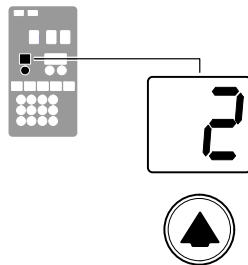
To review the fault log

1. Press and hold the **Setup** key.

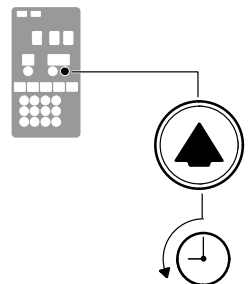
The automatic scan stops and operating parameter 1 appears in the left display.



Setup Key



Left display and scroll key



Scrolling through the fault log

2. Scroll the left display to parameter 2 (the fault log).

The right display indicates the last fault that occurred as follows:

- If the last fault was an F1, F2, or F3 fault, then the LED on the affected component key turns yellow.
- If the last fault to occur was an F4 fault, then the LEDs on all of the component keys turn off.
- The right display indicates the log entry for the last fault to occur. Table 4-10 provides the meaning of each digit in the log entry. Following the table are two example fault log entries.

3. Press the right-display scroll key to review each of the remaining nine log entries. Each press of the scroll key displays a progressively older log entry.

NOTE: The fault log only stores the last ten faults. After ten faults occur, the existing log entries are overwritten, beginning with the oldest entry, by the eleventh and following log entries.

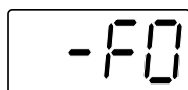
4. Press the **Setup** key to return to the automatic scan mode.

Table 4-10 Fault Log

First Digit	Second and Third Digits	Fourth Digit
<i>Component/Subcode (for F4 only):</i> 1 = Tank or hose/applicator 1 2 = Manifold or hose/applicator 2 3 = Hose 3 or applicator 3 4 = Hose 4 or applicator 4 5 = Hose 5 or applicator 5 6 = Hose 6 or applicator 6 7 = Hose 7 or applicator 7 8 = Hose 8 or applicator 8	- F	<i>Type of fault:</i> 0 = Unused log entry 1 = RTD (open or short) 2 = Component under temperature 3 = Component over temperature 4 = Processor or electrical failure

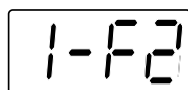
Fault Log Examples

Example 1:



An unused log entry.

Example 2:



If the LED on the tank key were on, this log entry would indicate that the tank is under temperature. If the LED on the hose key were on, this log entry would indicate that hose 1 is under temperature.



To view the number of heater hours that have elapsed since a log entry was created, simultaneously press both of the right-display scroll keys. The hours are indicated in the right display.

The melter will return to the automatic scan mode if the fault log is left open for a period of two minutes without any key being pressed.

When an F1 fault is the result of a hose/applicator pair being disconnected from the melter, two fault log entries are created. The first entry is for the applicator and the second entry is for the hose.

Monitor Melter Faults (contd)

Table 4-11 Melter Faults

Display Code/Sub-code	Name	Affect on Melter	Cause
F1/None	RTD	Heaters turn off	The RTD for the component indicated has failed or the component was disconnected from the melter.
F2/None	Under temperature	Heaters turn off	The actual temperature of the component indicated has dropped below the under temperature delta, which was set using parameter 22.
F3/None	Over temperature	Heaters turn off	The actual temperature of the component indicated has increased beyond the over temperature delta, which was set using parameter 21.
F4/1	RAM test	Melter stops functioning	Internal RAM failure
F4/2	Internal Clock time	Heaters remain on, but fault condition persists	Internal clock failure
F4/3	RAM back-up battery	Clock does not display correctly	Insufficient voltage from RAM back-up battery
F4/4	Internal clock battery backed RAM	Heaters remain on, but fault condition persists	Battery-backed RAM failure
F4/5	Internal clock battery	Heaters remain on, but fault condition persists	Battery-backed RAM battery dead
F4/6	Analog-to-digital	Melter stops functioning	RTD analog-to-digital converter failed
F4/7	Analog-to-digital calibration	Melter stops functioning	Possible RTD circuit short RTD analog-to-digital converter could not be calibrated
F4/8	Main board feedback	Melter stops functioning	Communication failure between main board and CPU
<i>Continued...</i>			

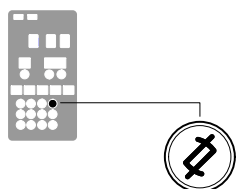
Display Code/Sub-code	Name	Affect on Melter	Cause
F4/A	Thermostat	Melter stops functioning	Tank or manifold thermostat is open
F4/d	Communications with optional I/O card	Heaters remain on, but fault condition persists	Communication failure between CPU and the optional I/O card
F4/E	Fieldbus communications failure	Heaters remain on, but fault condition persists. Parent communication may not function properly.	Fieldbus card failure.
F4/F	8 H/G expansion base failure	Heaters remain on, but fault condition persists. Hose/application 7 and 8 components will not heat properly.	Communication failure between CPU and the 8 H/G expansion base
F5	RTD	Heaters do not heat	CPU board and/or main board might have been used with a different type RTD sensor (either Pt or Ni) than what is now configured. Please contact Nordson Technical Support to help resolve this issue.

To put the melter back into operation

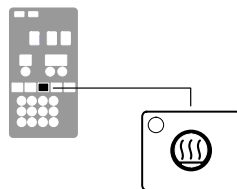
1. Diagnose and correct the fault condition. Refer to Section 6, *Troubleshooting*, for information about diagnosing and correcting fault conditions.

NOTE: When a fatal F4 fault exists, the control switch will not function. Remove power to the melter at the local disconnect switch.

2. Return the melter to the automatic scan mode by pressing the **Setup** key twice.
3. Press the **Clear/Reset** key.
4. Press the **Heater** key to turn on the heaters.



Clear/Reset key

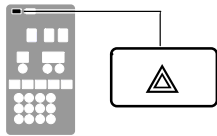


Heater key

How F1, F2, and F3 Faults are Handled

When the melter detects an F1, F2, or an F3 fault:

1. The automatic scan stops and the melter begins to monitor the potential fault for up to two minutes. The ready and heater LEDs remain on during the two-minute time period. If, at any time during the two-minute period, the melter detects that the fault condition no longer exists, the melter will return to the automatic scan mode.
2. The LED on the affected component key (tank, hose, or applicator) turns on to indicate the type of component that has, or is, failing.
3. The right display indicates the type of fault (F1, F2, or F3).
4. The left display indicates, as follows, the component that has, or is, failing.
 - If the LED on the tank key is on, the left display will indicate either 1 for the tank or 2 for the manifold.
 - If the LED on the hose or applicator key is on, the left display will indicate the number of the affected hose or applicator.
5. If the fault condition still exists at the end of the two-minute monitoring period, the ready LED will turn off, the red fault LED will turn on, the heaters turn off, and the melter records the fault in the fault log. Refer to *To review the fault log* earlier in this section.



Fault LED (red)

How F4 Faults are Handled

When the melter detects an F4 fault:

1. The ready LED turns off and the red fault LED turns on.
2. All of the component key LEDs (tank, hose, and applicator) turn off.
3. The right display indicates F4.
4. The left display indicates a sub-code. Sub-codes classify the fault as being fatal or nonfatal. The affect on the melter of each of these two classes of F4 faults is:

Fatal—The fault LED turns on and stays on and the melter stops functioning completely.

Nonfatal—The fault LED turns on for five seconds, but the heaters and pump continue to operate normally. Nonfatal faults affect the internal clock and the optional I/Os.

Refer to Section 6, *Troubleshooting*, for information about diagnosing F4 faults.

5. The melter records the fault in the fault log. Refer to *To review the fault log* earlier in this section.

How F4 Faults are Handled (contd)



To view the temperature of a heated component when an F2 or F3 fault exists, simultaneously press and hold both of the right-display scroll keys.

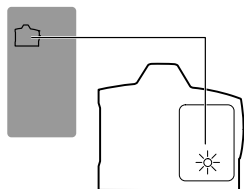
You can temporarily dismiss an F1 fault (RTD) and return to the automatic scan mode by pressing the **Clear/Reset** key. The heaters will, however, remain off. If the fault condition still exists two minutes after pressing the clear/reset key, the fault LED will turn back on.

When an F1 fault code appears, you can determine whether the fault was caused by an open or a shorted RTD by simultaneously pressing both of the right-display scroll keys. If the right display indicates OP, the RTD is open, if it indicates SH, the RTD has shorted.

If, for any reason, a component reaches 235 °C (458 °F), an immediate F3 fault will occur (no two-minute monitoring period).

If F4 appears in the right display when you press the clock key, the internal clock function has failed.

Monitor the Level of Hot Melt in the Tank



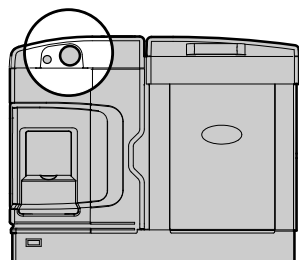
Low-level LED (yellow)

The tank contains a low-level float switch. When the volume of hot melt in the tank drops below one-half of the tank's rated capacity, the float switch turns on the low-level LED located inside the tank key.

Nordson recommends that the tank be kept at least one-half full while the melter is operating.

NOTE: The melter is also equipped with a low-level output that can be connected to a customer-supplied signaling device or process control system. Refer to Section 3, *Installing Melter Outputs*, for information about using the low-level output.

Monitor and Adjust the Operating Air Pressure



Pressure regulator and adjustment screw

The air pressure gauge located on the front of the melter indicates the air pressure that is supplied to the melter's pump. The air pressure must be adjusted to meet the requirements of your manufacturing process.

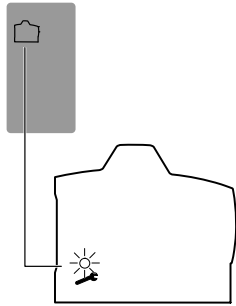
NOTE: The minimum operating air pressure is 0.7 bar (10 psi). Operating the melter with the air pressure set to less than 0.7 bar (10 psi) may cause the pump to function erratically.

Use the adjustment screw located to the right of the pressure gauge to adjust the operating air pressure.

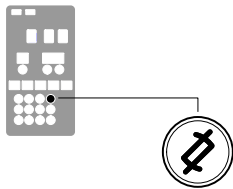
Typically, adjustments to the operating air pressure are made in order to change the volume of hot melt dispensed by the applicators. Other factors such as the temperature of the hot melt, the speed of the manufacturing line, and the type and size of the nozzles used on the applicators also impact the volume of hot melt that is dispensed.

CAUTION! Do not force the air pressure adjustment screw beyond its normal range of adjustment. Forcing the adjustment screw beyond its normal range of adjustment will damage the pneumatic assembly.

Monitor the Service Interval



Service LED (yellow)



Clear/Reset key

The melter can be set up so that the service LED located on the left side of the control panel turns on after a customer-defined time period elapses. The service LED may be used to signal the need to change the hot melt filter or to complete any other customer-specified maintenance activity. Once the specified maintenance is performed, the service LED must be reset.

To reset the service LED

With the melter in the scan mode, press the **Clear/Reset** key to turn off the service LED and reset the service interval time.



The default setting for the service interval time is 500 hours.

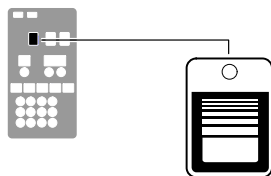
Appendix B, *Parameter 5*

Adjusting Component Temperatures

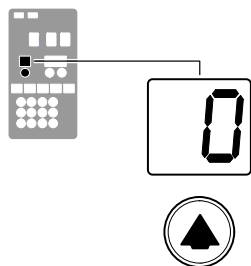
You can adjust the the set-point temperature of heated components using the following methods:

- **Global**—The tank and all hoses and applicators are set to the same set-point temperature.
- **Global-by-component group**—All of the hoses or all of the applicators are set to the same set-point temperature.
- **Individual Component**—The set-point temperature of the tank and each hose and applicator is adjusted independently.

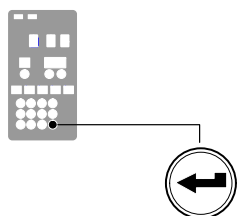
Before adjusting set-point temperatures, confirm that each hose/applicator pair is connected to the correct hose/applicator module. For example, hose/applicator pair 1 should be connected to the first receptacle (lowest) on hose/applicator module 1 (lowest module). Refer to *More About Heated Components*, earlier in this section for information about hose/applicator modules.



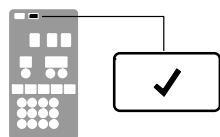
Tank key



Left display and scroll key



Enter key



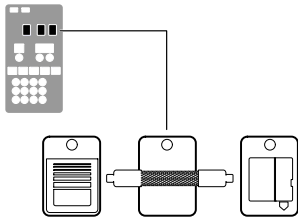
Ready LED

To adjust set-point temperatures using the global method

1. Press and hold the **Tank** key for three seconds.
The left display flashes 1.
2. Scroll the left display to 0 (flashing).
The right display indicates all dashes (- - -) and the LEDs on all of the component keys turn green.
3. Press the **Enter** key.
The right display flashes.
4. Use the keypad to enter the set-point temperature recommended by the manufacturer of the hot melt. Refer to the technical data sheet provided by the manufacturer of the hot melt to determine the optimal set-point temperature.

NOTE: If the keypad or the right-display scroll keys have no affect on the right display, the melter is password protected. You must enter a valid password before you can change set-point temperatures. Refer *Enter the Melter Password*, later in this section.

5. Press the **Tank** key.
All components begin to heat or cool to the new global set-point temperature. When all of the components reach their set-point temperature, the ready LED turns on (green).



Tank, hose, and applicator keys

To adjust the set-point temperature using the global-by-component method

1. Press and hold the **Hose** or **Applicator** key for three seconds.

The left display indicates the number of the first sequential hose or applicator. The right display indicates the current set-point temperature of the hose or the applicator.

2. Scroll the left display to 0.

The right display indicates all dashes (- - -).

3. Press the **Enter** key.

The right display flashes.

4. Use the keypad to enter the set-point temperature recommended by the manufacturer of the hot melt. Refer to the technical data sheet provided by the manufacturer of the hot melt to determine the optimal set-point temperature.

NOTE: If the keypad or the right-display scroll keys have no effect on the right display, the melter is password protected. You must enter a valid password before you can change set-point temperatures. Refer to *Enter the Melter Password*, later in this section.

5. Press the **Enter** key.

The hoses or the applicators begin to heat or cool to their new set-point temperature.

To adjust the set-point temperature of an individual component

1. Press and hold the **Tank**, **Hose**, or **Applicator** key for three seconds.

If the tank key was pressed, the left display indicates 1 (Flashing). If a hose or applicator key was pressed, the left display indicates the number of the first sequential hose or applicator (Flashing). The right display indicates the current set-point temperature of the component indicated in the left display.

2. Scroll the left display to the number of the desired component.

The right display indicates the current set-point temperature of the component that you selected in the left display.

3. Press the **Enter** key.

The right display flashes.

4. Use the keypad to enter the set-point temperature recommended by the manufacturer of the hot melt. Refer to the technical data sheet provided by the manufacturer of the hot melt to determine the optimal set-point temperature.

NOTE: If the keypad or the right-display scroll keys have no effect on the right display, the melter is password protected. You must enter a valid password before you can change set-point temperatures. Refer to *Enter the Melter Password*, later in this section.

5. Do *one* of the following:
 - To register the new set-point temperature and then move on to change the set-point temperature of the next sequential component, press the **Enter** key and then repeat steps 4 and 5.
 - To register the new set-point temperature and return to the automatic scan mode, go to step 6.
6. Press any component key (tank, hose, or applicator).

The selected component begins to heat or cool to its new set-point temperature.



If you enter a valid set-point temperature for a hose/applicator that is not connected to the melter or if you enter a set-point temperature that is out of range, the right display will indicate dashes (---) for three seconds and then change back to the original set-point temperature.

When the right display is flashing, you can quickly change the current set-point temperature to 0 degrees (off) by simultaneously pressing both of right-display scroll keys.

After removing a hose or a applicator, use the individual component method of set-point temperature adjustment to set the component's temperature to zero degrees (off). This will avoid causing an F1 fault when a hose or applicator is added, use the individual component method to set the desired temperature.

The factory set-point temperature of the tank is 175 °C (350 °F). The factory set-point temperature of all others components is zero degrees (off).

When the units of temperature is set to degrees Celsius, the minimum and maximum set-point temperatures are 40 °C and 230 °C. When the units of temperature are set to degrees Fahrenheit, the minimum and maximum set-point temperatures are 100 °F and 450 °F.

When using the right-display scroll keys to adjust a set-point temperature, the right display automatically increments between 0, 175, and 230 °C or between 0, 350, and 450 °F.

If you make a mistake while you are changing a set-point temperature, but you have not yet pressed the enter key, press the **Clear/Reset** key to reset the right display to the original temperature.

The melter will exit the setup mode and return to the automatic scan mode two minutes after the last key is pressed.

A global set-point temperature of zero degrees (Celsius or Fahrenheit) turns all components off.

When scrolling through component numbers in the left display, component numbers that are associated with unused hose/applicator receptacles are skipped.

The melter stores a record of the last ten changes made to the set-point temperatures (and operating parameters) in the change history log.

*Section 3, Installation, Review
Parameter and Set-point
Temperature Changes*

You can save set-point temperature changes by simultaneously pressing the **1** key and the **Setup** key.

*Section 3, Operation, Save and
Restore Melter Setting*

Enter the Melter Password

If the melter is password protected, a valid password must be entered before any set-point temperature or melter parameter can be changed.

To enter a melter password

1. Press the **Setup** key.
The left display indicates parameter 0 (flashing) and the right display indicates 4000.

2. Press the **Enter** key.
The right display begins flashing.

3. Use the keypad to enter the melter password.

4. Press the **Enter** key.

One of the following occurs:

- If the password is correct, the left display indicates parameter 1.
- If the password is incorrect, the left display remains at 0 and the right display momentarily indicates dashes (----) and then returns to 4000.

If the password is incorrect, re-enter it and then press the **Enter** key.



The melter will automatically revert back to the password-protected mode two minutes after the last key press (any key). To force the melter back into the password protected mode before two minutes has elapsed, press the **Setup** key twice.

The melter password is created and enabled/disabled during system setup.

Section 3, *Setting Up the Melter*

Using Melter Function Keys

The control panel provides the following standard and special function keys.

Standard function keys

- Heater
- Pump
- Setup

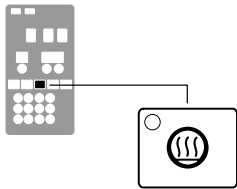
Special function keys

- Seven-day clock
- Standby



CAUTION: Unintentionally activating function keys can, under the correct circumstances, have undesirable effects on the melter or the manufacturing process. Only personnel who are familiar with the melter's setup and its connection with the manufacturing process should use the function keys. Improper use of the function keys can result in erratic process behavior or personal injury.

Heater Key

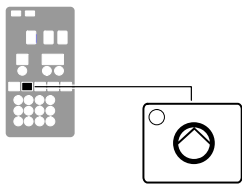


Heater key

Use the heater key to manually turn the component heaters on and off. Pressing the heater key overrides the control (on or off) of the heaters by either the seven-day clock feature or a remote input. The LED on the heater key turns on when the heaters are on.

When a fault occurs (Refer to *Monitor Melter Faults*, earlier in this section) the heaters automatically turn off. The heater key is used to turn the heaters back on after correcting a fault condition.

Pump Key



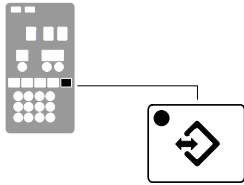
Pump key

Use the pump key to start or stop the pump. The LED on the pump key turns on (green) when the pump is running.

If the automatic pump on feature (parameter 8) is disabled, then the pump key must be used to start the pump when the melter is ready.

If any of the inputs are set up to use the pump enable/disable control option (option 3), the pump will not start until the pump key is pressed (LED on) *and* the correct voltage is applied to the input contacts. If the pump is enabled, but the input voltage is not present, the pump LED will flash green.

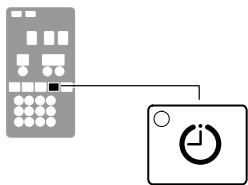
Setup Key



Setup key

Use the setup key to place the melter into and take the melter out of the setup mode. When the melter is placed into the setup mode, the automatic scan stops and the left and right displays are used to select and read or edit operating parameters.

Seven-day Clock Key



Seven-day clock key

Use the seven-day clock key to turn the melter's clock feature on and off. When the clock is on, the temperature of each heated component is automatically regulated based on a set of user-defined schedules.

To accommodate daily shift work and non-working days, four clock schedules are available. Schedules 1, 2, and 3 are used to specify when the heaters should turn on and off or when the melter should enter and exit the standby mode. Schedule 0 is used to keep the melter in the last condition dictated by the clock (heaters on or off, or standby).

When a clock schedule calls for the heaters to be on, the heaters are regulated at their pre-assigned set-point temperatures. When the clock activates the standby mode, the set-point temperature of each component is temporarily reduced by a pre-set standby delta.

Refer to Appendix B, *Operating Parameters, Seven-day Clock*, for information about setting up the seven-day clock and the standby delta.



If the melter is switched off while the clock is on, the clock will automatically turn back on the next time the melter is switched back on.

If the heaters are manually turned off at the time that a clock schedule calls for the heaters to be on, the heaters will not turn back on until the next clock schedule calls for them to be on.

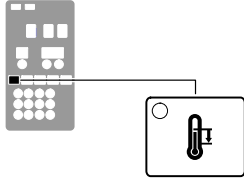
The clock will still operate when the melter is faulting or is in the setup mode.

If F4 appears in the right display when you press the clock key, the internal clock function has failed.

Section 7, *Troubleshooting*

Using Melter Function Keys *(contd)*

Standby Key



Standby key

Use the standby key to manually place the melter into, and take it out of, the standby mode. Using the standby mode during periods of time when the melter is inactive helps to conserve energy and allows heated components to quickly return to their set-point temperatures when the melter is once again needed.

When the melter is placed into the standby mode, the temperatures of all components are reduced down from their set-point temperature by a pre-set standby delta. The melter will remain in the standby mode until the standby key is pressed or the function of one of the operating parameters takes the melter out of the standby mode.

If the melter was set up to use the manual standby timer (parameter 26), pressing the standby key will place the melter in the standby mode for the period of time specified by the timer. After the manual standby time has elapsed, the melter will once again begin heating all of the components to their assigned set-point temperature.

Using the standby key overrides the control of the melter (on or off) by the seven-day clock or a remote input.

Refer to Section 3, *Operation Setting Up the Melter*, and to Appendix B, *Operating Parameters*, for information about setting the standby delta and the standby timer.



The melter may also be set up to enter the standby mode using a variety of operating parameters.

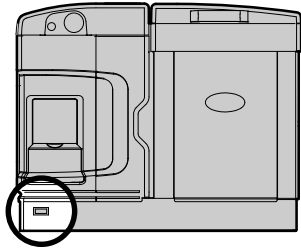
Appendix B, Parameters 23, 24, 25, 26, 30–33, 57, 62, and 67

Whenever manual standby is enabled, the standby LED blinks.

Appendix B, Parameter 26

Shutting Down the Melter

Shut down the melter when it will not be used for an extended period of time.



Melter control switch (on/off)

To shut the melter down

1. Switch the melter off.

The automatic pressure discharge (APD) valve relieves the hydraulic pressure in the manifold back to the tank.

2. Disable the applicators as follows:

- Air-operated applicators: Turn off the air supply to the applicators.
- Electric applicators: Turn off the applicator driver, pattern controller, or timer.

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Section 5

Maintenance



WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

Table 5-1 describes the preventive maintenance tasks required to keep ProBlue melters operating within their specified limits and to prevent equipment malfunctions. For information about maintaining optional equipment that was supplied by Nordson, refer to the instructions provided with the equipment.

If the melter stops operating or is operating incorrectly, refer to Section 6, *Troubleshooting*, for information about diagnosing common problems and performing corrective maintenance.

Table 5-1 Preventive Maintenance Tasks

Task	Frequency	Reference
Relieving system pressure	Before performing any maintenance task that requires opening a hydraulic connection or port	<i>Relieving System Pressure</i>
Lockout external communications	Before performing any maintenance task	<i>Locking Out External Communications</i>
Lubricate the SP/ProBlue piston pump	At least quarterly NOTE: SP/ProBlue pumps that utilize instrument-grade air should be lubricated <i>every one-to-three months</i> .	<i>Lubricating the SP Pump</i>
Cleaning the exterior of the melter, hoses, and applicators	Daily	<i>Cleaning the Melter</i>
Replacing the filter	- As needed - When changing the type or grade of hot melt	<i>Replacing the Filter</i>
Cleaning the tank	- When changing the type or grade of hot melt - When excessive charring occurs	<i>Cleaning the Tank</i>
Removing the melter for the sub-base	As needed	<i>Removing the Melter from the Sub-base</i>

Lubricating the SP Pump

To lubricate SP/ProBlue pumps, see Figure 5-1.

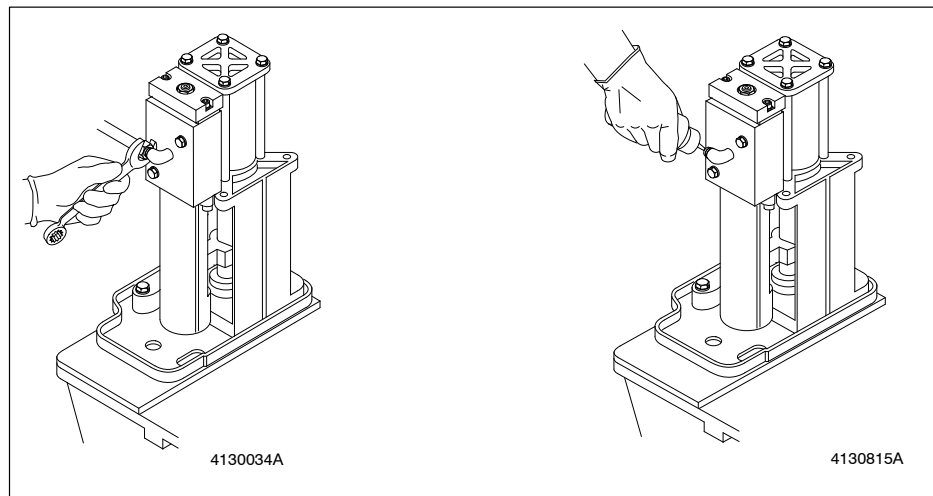


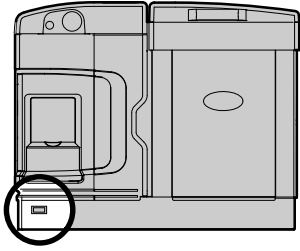
Figure 5-1 Disconnecting and lubricating the air inlet line

1. Remove the pump covers, and then disconnect the air inlet line.
2. Place 3-4 drops of lubricant in the air inlet elbow.
3. Reconnect the air line.
4. Open the drain valve and operate the pump at high speed for 10-15 seconds.
5. Close the drain valve and resume normal operation.
6. Replace the pump covers.

Table 5-2 SP Service Kits

Part Number	Description
1120290	Service kit, SP/ProBlue lubricating oil
1006027	Service kit, valve assy

Relieving System Pressure



Melter control switch (on/off)

Before disconnecting any hydraulic fitting or opening any pressurized port, always complete the following procedure to safely relieve hydraulic pressure that may be trapped inside the melter, hoses, and applicators.

To relieve system pressure

1. Switch the melter off.

See Figure 5-2.

2. Lower the drain chute and place a suitable waste container under the drain port.
3. Using a flat-tip screwdriver, *slowly* turn the drain valve counterclockwise three turns.
4. Turn the drain valve clockwise until it stops (valve closed), and then wipe off and raise the drain chute.
5. Trigger the applicators until hot melt no longer flows from the applicators.

Locking Out External Communications



WARNING! Disable external inputs and fieldbus communications with the melter before performing maintenance. Failure to disable external inputs or fieldbus communications with the melter can result in personal injury due to unexpected operation of the melter while performing maintenance.

To lockout external communications with the melter

- Set the control option for operating parameter 14 to 1 (Enabled).

Refer to Section 3, *Setting Up the Melter*, for information about changing operating parameters.

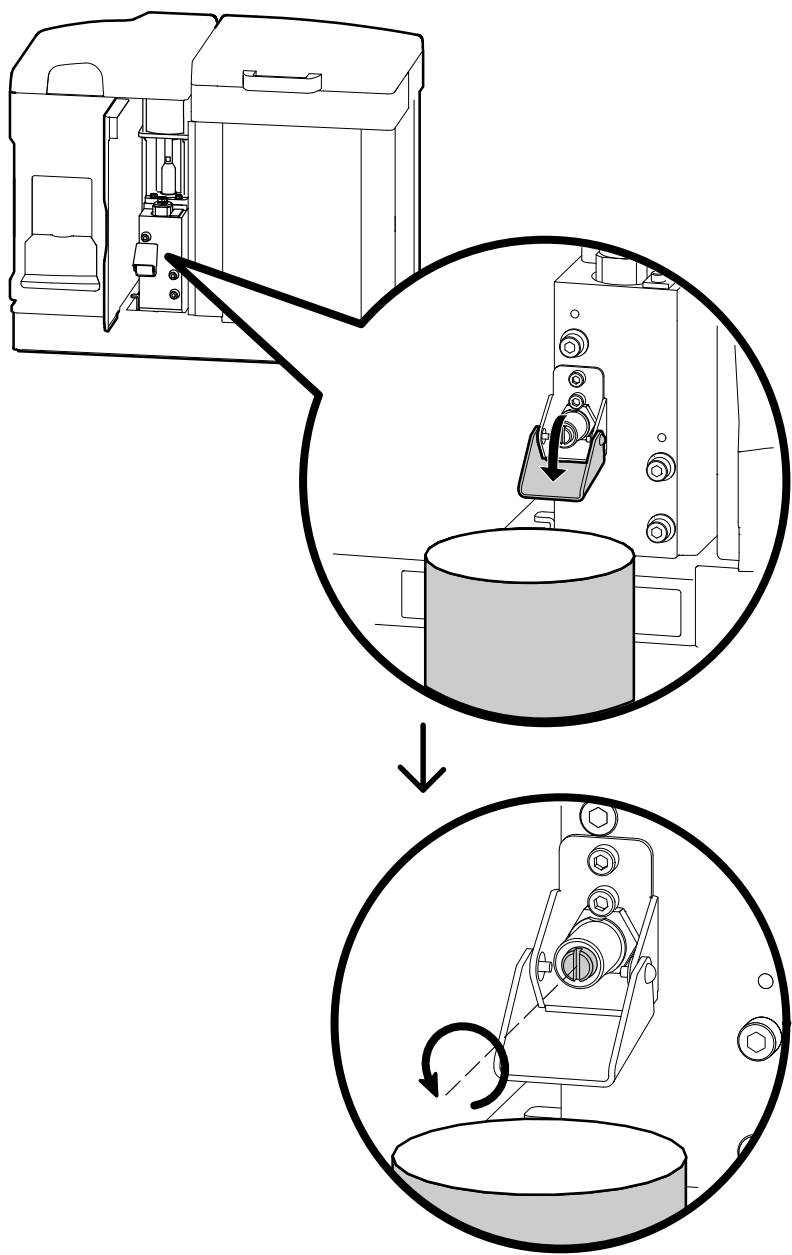


Figure 5-2 Lowering the drain chute and opening the drain valve

Cleaning the Melter

To prevent components from overheating due to heat build-up or loss of air circulation, regularly remove any hot melt that collects on the exterior of the melter, hoses, and applicators.

If hot melt inadvertently spills inside the pump compartment or other interior spaces, the exterior panels can be removed in order to clean out the spilled hot melt.



WARNING! Risk of electricution and fire! Do not clean the melter with a direct stream of water or steam. Use only water or an appropriate, non-flammable cleaning solution that is applied using a clean cloth. Cleaning the melter using a direct stream of water or steam or a flammable solvent can result in property damage and personal injury, including death.

To clean the exterior of the melter

- Use citrus-based or other cleaning compounds that are compatible with polyester.
- Apply cleaning compounds using a soft cloth.
- Do not use pointed or sharp tools to clean the exterior surface.

To remove and replace the exterior panels

See Figure 5-3.

1. De-energize the melter. Refer to Section 1, *De-energizing the System*.
2. Turn off the plant air supply to the melter and then disconnect the air filter from the back of the melter.
3. Open the pump enclosure door (The door must be open in order to remove the top panel.).
4. Loosen the screws that secure panels to the melter.

NOTE: If necessary, the pump cover can also be removed.

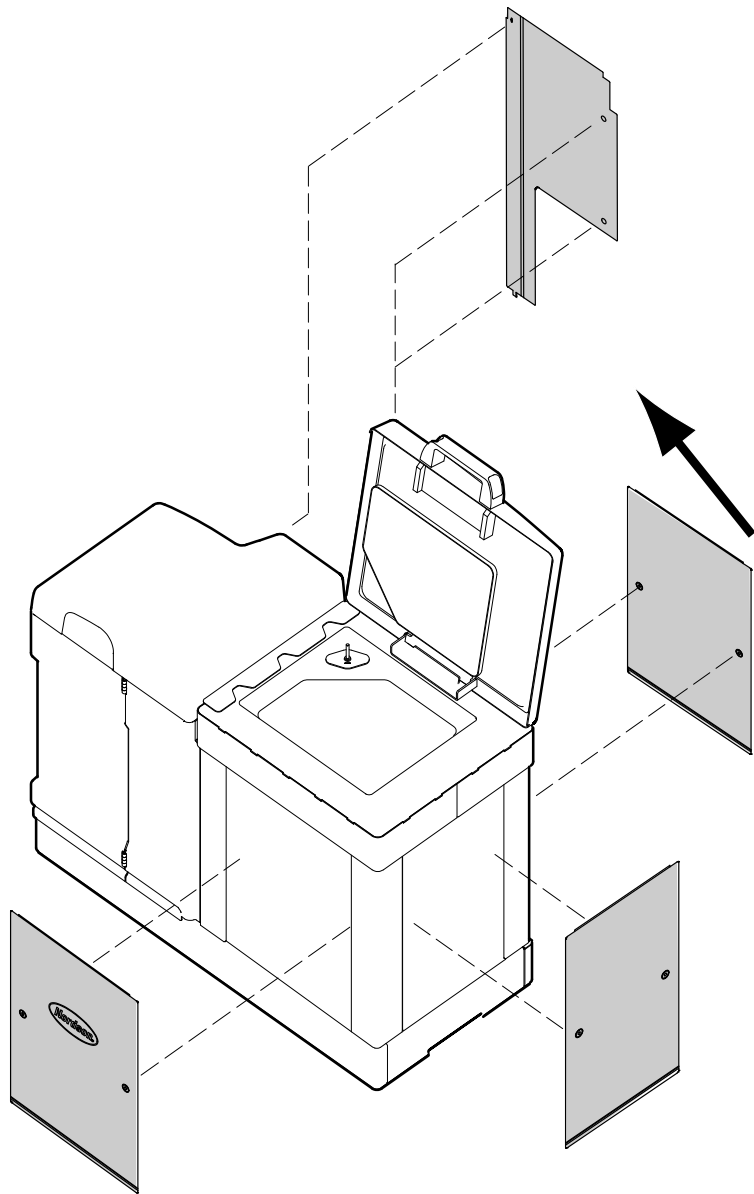
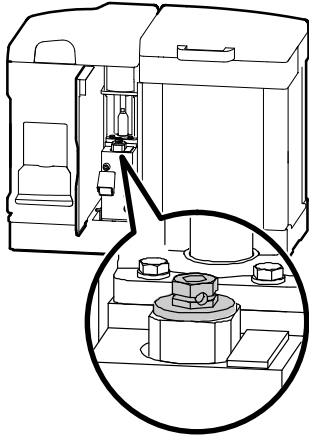
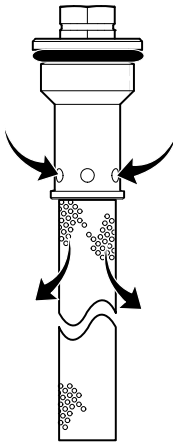


Figure 5-3 Removing the exterior panels

Replacing the Filter



Filter location



Hot melt flow path

ProBlue melters are equipped with a 100-mesh (.15 mm) disposable hot melt filter. The filter removes debris and char from the hot melt as it flows from the tank. Hot melt flows from the inside to the outside of the filter, trapping contaminants inside the filter. There is no need to back-flush or clean the filter.

When the filter reaches the end of its service life, it should be replaced. The factors that determine the service life of the filter are:

- the type, grade, and purity of the solid-form hot melt
- the set point temperature of the tank
- the period of time that the hot melt remains in the tank

The filter should also be replaced when making the change to a different type or grade of hot melt.

To determine the optimal service life for the filter, monitor and compare the total number of hours that the heaters are on with observations of:

- the purity of the dispensed hot melt
- increases in operating pressure
- the frequency of applicator nozzle replacement or cleaning

Monitoring the Life of the Filter

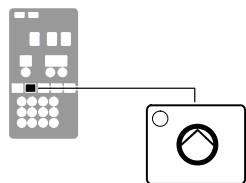
As an aid to ensuring that the filter is replaced at the end of its service life, the melter is equipped with a service LED that turns on at the end of a customer-defined time period. You can use this feature to alert you when it is time to change the filter. Refer to Section 3, *Setting Up the Melter*, for information about the service interval time.

When the service LED turns on, replace the filter, and then press the **Clear/Reset** key to reset the timer and turn off the service LED.

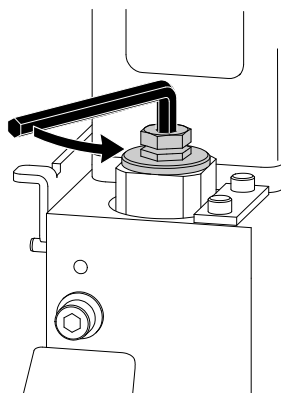
NOTE: The melter must be in the automatic scan mode when you press the Clear/Reset key.

To replace the filter

NOTE: Instructions for replacing the filter are also provided on the inside of the pump enclosure door.



Pump key



Loosening the filter

1. Relieve the system pressure. Refer to *Relieving System Pressure*, at the beginning of this section.
2. Use a 8 mm hex wrench or an adjustable wrench to loosen (counterclockwise) and then remove the filter.
3. Properly dispose of the old filter.
4. Confirm that the O-ring on the new filter is in good condition.
5. Screw the filter into the pump body and then tighten the filter to 4.5 N•m (40 in.-lb).
6. Resume normal operation.

Cleaning the Tank

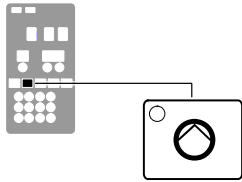
To avoid the problems that can occur when different hot melt materials are mixed or when hot melt char forms in the tank, clean the tank when:

- changing to a different type of hot melt
- excessive char builds up inside the tank

NOTE: The tank cleaning procedures provided in this section require that an appropriate hot melt cleaning fluid be used to soften or dissolve residual hot melt. Each type of hot melt should be supplied with a technical data sheet that names the appropriate cleaning fluid. If the technical data sheet is not available, contact the hot melt supplier.

To clean the tank when changing hot melt

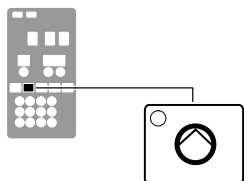
1. Operate the melter normally until the tank is empty.
2. If necessary, remove the strainer from the bottom of the tank.
3. Allow the melter to heat or cool to the temperature recommended by the manufacturer of the hot melt cleaning fluid.
4. Press the **Pump** key to stop the pump.
5. While wearing the appropriate protective equipment, wipe any residual hot melt from the inside of the tank.
6. Add the appropriate type and quantity of hot melt cleaning fluid to the tank.
7. Press the **Pump** key to start the pump.
8. Following the instructions provided with the cleaning fluid, pump all of the cleaning fluid from the tank.
9. Return the melter to normal operation and pump a minimum of one tank volume of the new type of hot melt through the tank, hoses, and applicators.



Pump key

To clean the tank of excessive char

1. Remove the old hot melt and loose char as follows:
 - a. Operate the melter normally until the tank is empty.
 - b. Allow the melter to heat or cool to the temperature recommended by the manufacturer of the hot melt cleaning fluid.
 - c. Press the **Pump** key to stop the pump.
 - d. While wearing the appropriate protective equipment, wipe any residual hot melt and loose char from the inside of the tank.
 - e. Add the appropriate type and quantity of cleaning fluid to the tank.



Pump key

See Figure 5-2.

2. Lower the drain chute and place a suitable waste container under the drain valve.
3. Press the **Pump** key to start the pump.
4. Using a flat-tip screwdriver, *slowly* turn the drain valve counterclockwise until cleaning fluid begins to flow from the drain.
5. Continue to slowly open the drain valve to create a controlled flow of cleaning fluid from the drain.
6. Add cleaning fluid to the tank and clean the tank according to the instructions provided with the cleaning fluid.
7. Press the **Pump** key to stop the pump.
8. Turn the drain valve clockwise until it stops (valve closed).
9. Wipe any cleaning fluid or hot melt residue away from the drain chute and then raise the chute.
10. Change the filter. Refer to *Replacing the Filter*, earlier in this section.

Removing the Melter from the Sub-base

1. Switch the melter off.
2. Relieve system pressure. Refer to *Relieving System Pressure* earlier in this section.
3. Disconnect the hoses.

See Figure 3-5.

4. Disconnect the power cable and ground lead.

See Figure 3-4.

5. Remove the four screws that secure the sub-base hinges to the melter.



WARNING! Risk of Hand Injury

Do not lower the melter onto the sub-base with the hinges in the vertical position. Always lay the hinges flat before lowering the melter onto the sub-base. See Figure 3-4 for correct hinge position.

Section 6

Troubleshooting



WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

This section provides quick-reference information for diagnosing melter faults indications as well as comprehensive melter diagnostic information that is provided in flowchart format. When required, the troubleshooting flowchart will refer you to diagnostic procedures provided later in this section.

If you cannot resolve the problem using the troubleshooting flowchart, contact your Nordson representative for technical assistance.

Safety

- Never disconnect cables from, or reconnect cables to, the main board while the melter is energized.
- Before breaking any hydraulic connection, always relieve system pressure. Refer to Section 5, *Relieving System Pressure*.
- Refer to the safety information provided with optional equipment.
- If the melter is removed from its sub-base for diagnostic checks or service, ensure that the ground lead between the chassis and the sub-base is re-attached when the melter is reconnected to the sub-base.

Melter Faults

Table 6-1 lists the four types of melter faults, potential causes, and expected corrective actions.

Table 6-1 Melter Faults

Display Code/Sub-code	Name	Affect on Melter	Cause	Corrective Action
F1/None	RTD	Heaters turn off	The RTD for the component indicated has failed or the component was disconnected from the melter.	Replace RTD Check hose/applicator connections See flowchart T.2
F2/None	Under temperature	Heaters turn off	The actual temperature of the component indicated has dropped below the under temperature delta, which was set using parameter 22.	Check for conditions that may cause a drop in ambient temperature Raise the set-point temperature of the component Replace RTD See flowchart T.2
F3/None	Over temperature	Heaters turn off	The actual temperature of the component indicated has increased beyond the over temperature delta, which was set using parameter 21.	Replace RTD See flowchart T.2
F4/1	RAM test	Melter stops functioning	Internal RAM failure	Replace CPU
F4/2	Internal Clock time	Heaters remain on, but fault condition persists	Internal clock failure	Replace CPU
F4/3	RAM back-up battery	Clock does not display correctly	Insufficient voltage from RAM back-up battery	Replace battery
F4/4	Internal clock battery backed RAM	Heaters remain on, but fault condition persists	Battery-backed RAM failure	Replace CPU
F4/5	Internal clock battery	Heaters remain on, but fault condition persists	Battery-backed RAM battery dead	Replace CPU
F4/6	Analog-to-digital	Melter stops functioning	RTD analog-to-digital converter failed	Replace main board or CPU

Table 6-1 Melter Faults (contd)

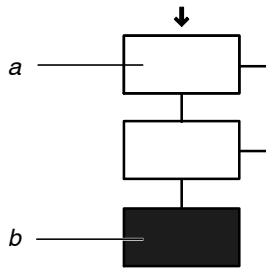
Display Code/Sub-code	Name	Affect on Melter	Cause	Corrective Action
F4/7	Analog-to-digital calibration	Melter stops functioning	Possible RTD circuit short RTD analog-to-digital converter could not be calibrated	Check RTD circuit for shorts. Refer to diagnostic procedures DP.6. Replace pertinent tank or manifold RTD harness, hose, or applicator cordset. Replace main board, ribbon cable, or CPU
F4/8	Main board feedback	Melter stops functioning	Communication failure between main board and CPU	Replace main board, ribbon cable, or CPU
F4/A	Thermostat	Melter stops functioning	Tank or manifold thermostat is open	Replace thermostat, J7 harness, or main board
F4/d	Communications with optional I/O card	Heaters remain on, but fault condition persists	Communication failure between CPU and the optional I/O card	Replace the I/O card or CPU
F4/E	Fieldbus communications failure	Heaters remain on, but fault condition persists. Parent communication may not function properly.	Fieldbus card failure.	Replace the Fieldbus card
F4/F	8 H/G expansion base failure	Heaters remain on, but fault condition persists. Hose/application 7 and 8 components will not heat properly.	Communication failure between CPU and the 8 hose/applicator expansion base	Check the 4-conductor harness connecting the 8-hose/applicator expansion base board J1 to the CPU board J4 connector Replace the 8 hose/applicator expansion base
F5	RTD	Heaters do not heat	CPU board and/or main board might have been used with a different type RTD sensor (either Pt or Ni) than what is now configured.	Contact Nordson Technical Support

If you get an ATE on the display, it could signal a bad CPU or display. Try the following:

1. Remove power from melter.
2. While holding Set-up and Heater keys, restore power to melter.

If ATE does not clear by doing the steps above, replace CPU or display.

Using the Troubleshooting Flowchart



Troubleshooting question and action blocks

a) Question b) Action

The flowchart, which is provided at the end of this section, is designed to assist you in diagnosing and correcting a complete or partial stop in hot melt output from the applicators. The chart is organized in a simple question-action block format. If your response to a question is yes (Y), continue downward in the chart to the next question or action block. If your response is no (N), continue to the right to the next question or action block. All diagnostic paths within the chart end with an action block that specifies one of the following three courses of action:

- Refer to information provided elsewhere in this manual
- Replace a component
- Complete a diagnostic procedure (DP.x)

To return your melter to service as quickly as possible, the chart is designed under the assumption that it is preferable to immediately replace a faulty assembly as opposed to conducting detailed diagnostics and repair of the assembly while the melter is out of service.

Use of the chart assumes that the melter is installed correctly and that it is set up to support the current manufacturing process. Refer to Section 3, *Installation*, for information about installing and setting up the melter.

Troubleshooting Quick-checks

Before using the troubleshooting charts, confirm that:

- the correct voltage plug is installed on terminal J1. Refer to Section 4, *Installation*, for information about selecting the correct voltage plug.
- external inputs (if used) are functioning properly.
- the standby or clock functions are not turned on (if not required or expected at the current time).

Identifying Electrical Components

Tables 6-2 through 6-5 describe the circuit board indicators, connection points, and test points that are referred to in the troubleshooting flowchart.

Table 6-6 provides the wire color-coding for the J7 (signal) harness.

Figure 6-1 illustrates the location of each of these circuit board components.

Table 6-2 Main PCA

Item Number	Type	Description
<i>Indicators</i>		
DS1	LED (Yellow)	Control signal for tank heater
DS2	Neon (Orange)	Power available for manifold heater
DS3	LED (Yellow)	Control signal for manifold heater
DS4	Neon (Orange)	Power available into main board after fuses F3/F4
DS5	LED (Green)	+5 VDC control voltage present on board
<i>Fuses</i>		
F1/F2	—	15 A, 250 V, Fast-acting, 1/4 inch
F3/F4	—	2 A, 250 V, Slow-blow, 5 x 20 mm
<i>Connection Points</i>		
J1/J2	Jumper	Voltage configuration plug with and without neutral
TB1	Input	AC power into board
TB2	Input/output	Output contacts 1–6. Input contacts 7–14
J5	Input/output	Control signal between main board and tank driver board
J6	Output	Power harness to manifold heater
J7	Input/Output	Control signal harness (RTD, control switch, thermostat, solenoid). See Figure 6-2 for pin-out.
J8	Input/Output	Analog/digital signal cable

Table 6-3 Tank Driver Board

Item Number	Type	Description
<i>Indicators</i>		
DS1	Neon (Orange)	Power to tank present
<i>Connection Points</i>		
J1	Input/Output	Control signal between main board and the tank driver board
J3	Jumper	Voltage plug
J4	Output	Power harness to tank
<i>Fuses</i>		
F1/F2	—	25 A, 250 V, Fast-acting, 1 13/32 in. x 1.5 in.

Table 6-4 CPU board

Item Number	Type	Description
<i>Indicators</i>		
Red LED	—	Indicates that CPU board has failed
Green LED	—	+ 5 VDC control voltage is present at the CPU board
<i>Connection Points</i>		
J1	Input/Output	Control signal between main PCA and CPU
J5	Input/Output	Control signal between I/O expansion card or Anybus card and the CPU
<i>Test Points</i>		
TP2/TP4	Contacts	4.75–5.25 V control voltage present at CPU

Identifying Electrical Components *(contd)*

Table 6-5 Hose/Applicator Power Module

Item Number	Type	Description
<i>Indicators</i>		
DS1	LED (Yellow)	Control power present for odd numbered hose
DS2	LED (Yellow)	Control power present for odd numbered applicator
DS3	LED (Yellow)	Control power present for even numbered hose
DS4	LED (Yellow)	Control power present for even numbered applicator
DS5	Neon (Orange)	AC power present at module for odd hose/applicator pair
DS6	Neon (Orange)	AC power present at module for even hose/applicator pair
<i>Fuses</i>		
F1/F2 and F3/F4	—	6.3 A, 250 V, Fast-acting, 5 x 20 mm

Table 6-6 J7 Wire Harness Color Coding

Component	Wire Pair Color
Tank RTD	White
Manifold RTD	Black
On/Off control switch	Purple
Low level switch	Red
Pump solenoid	Dark Blue
Tank thermostat	Gray
Manifold thermostat	Brown

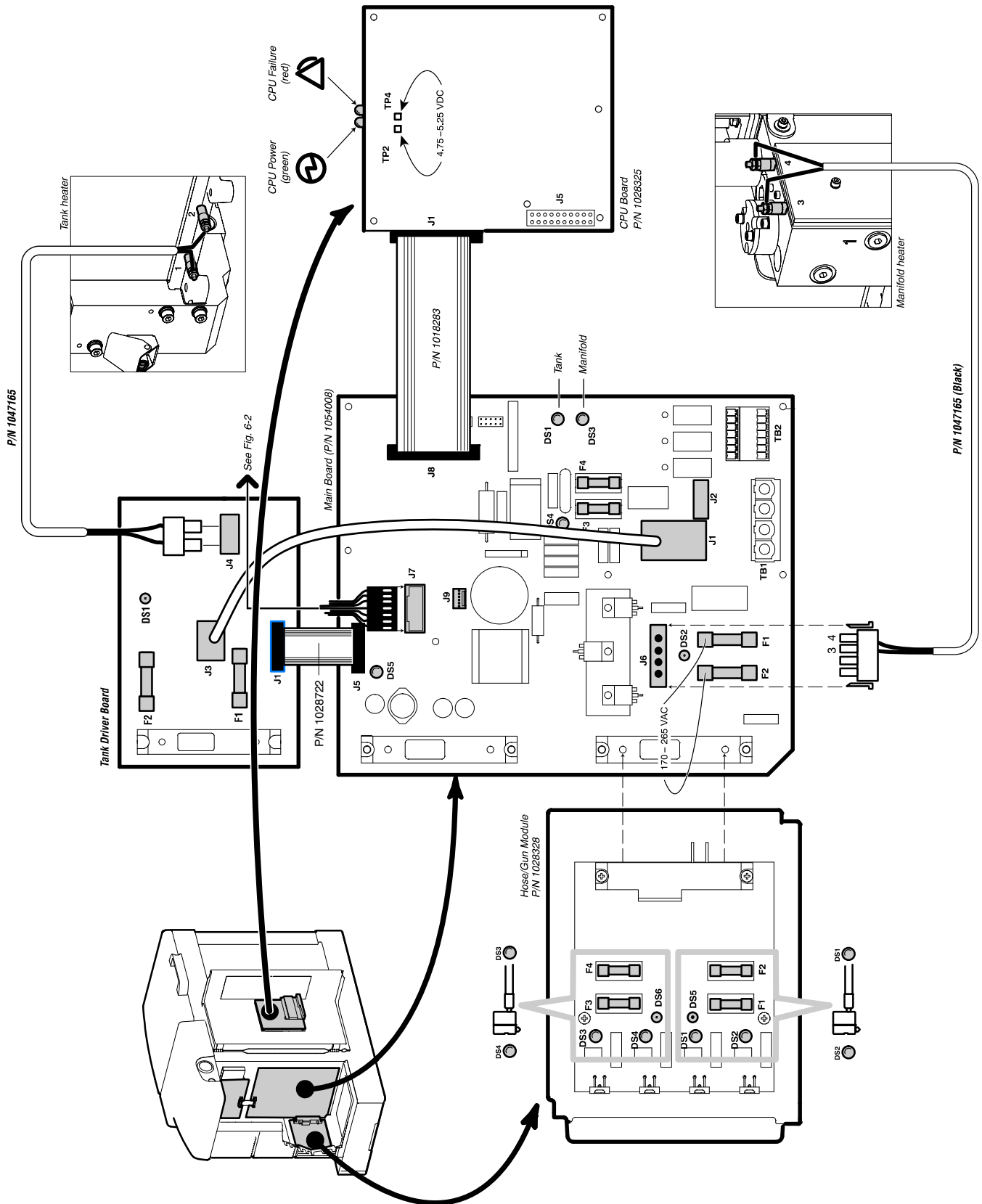


Figure 6-1 Electrical components

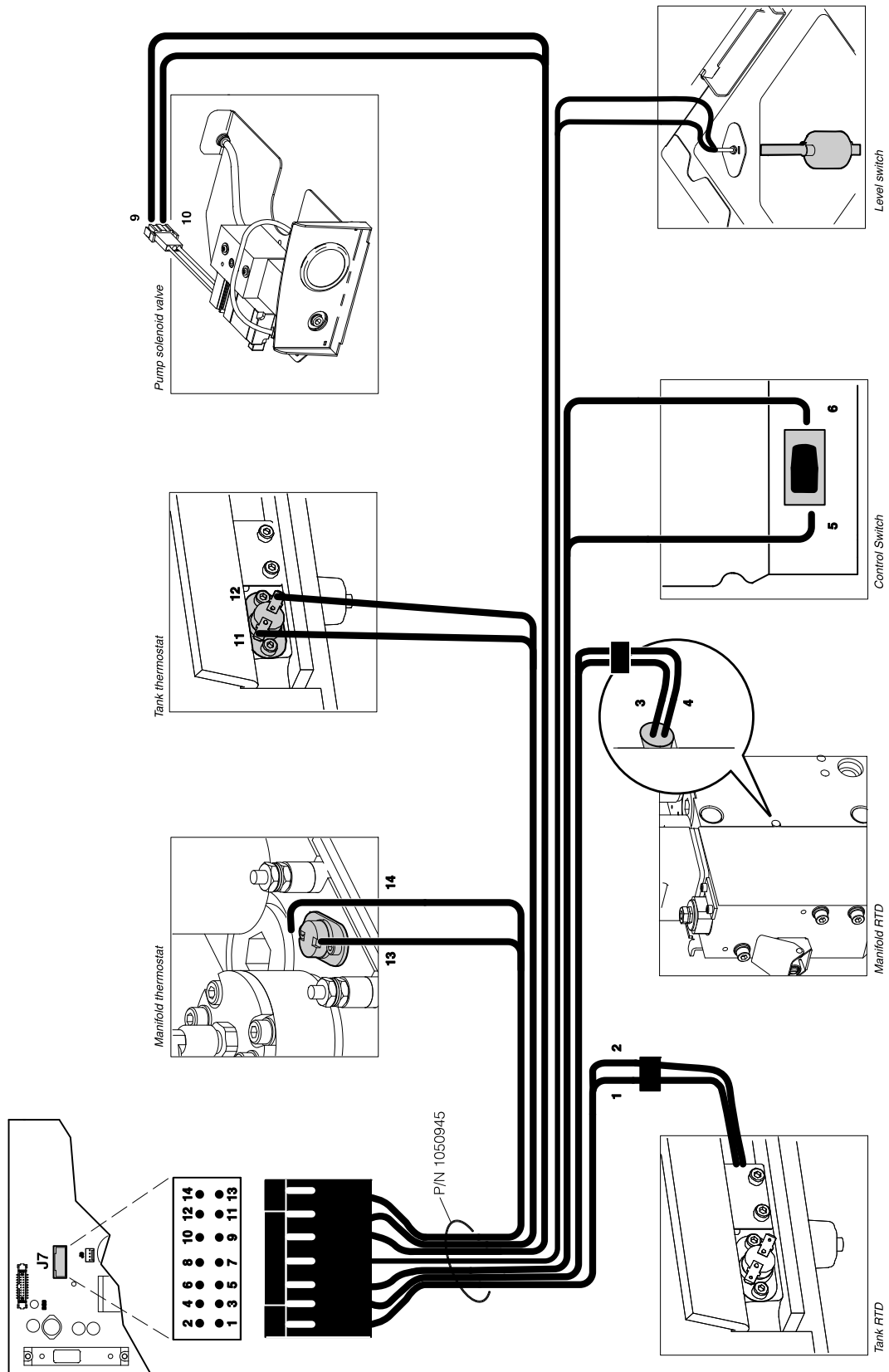


Figure 6-2 Power and control harness

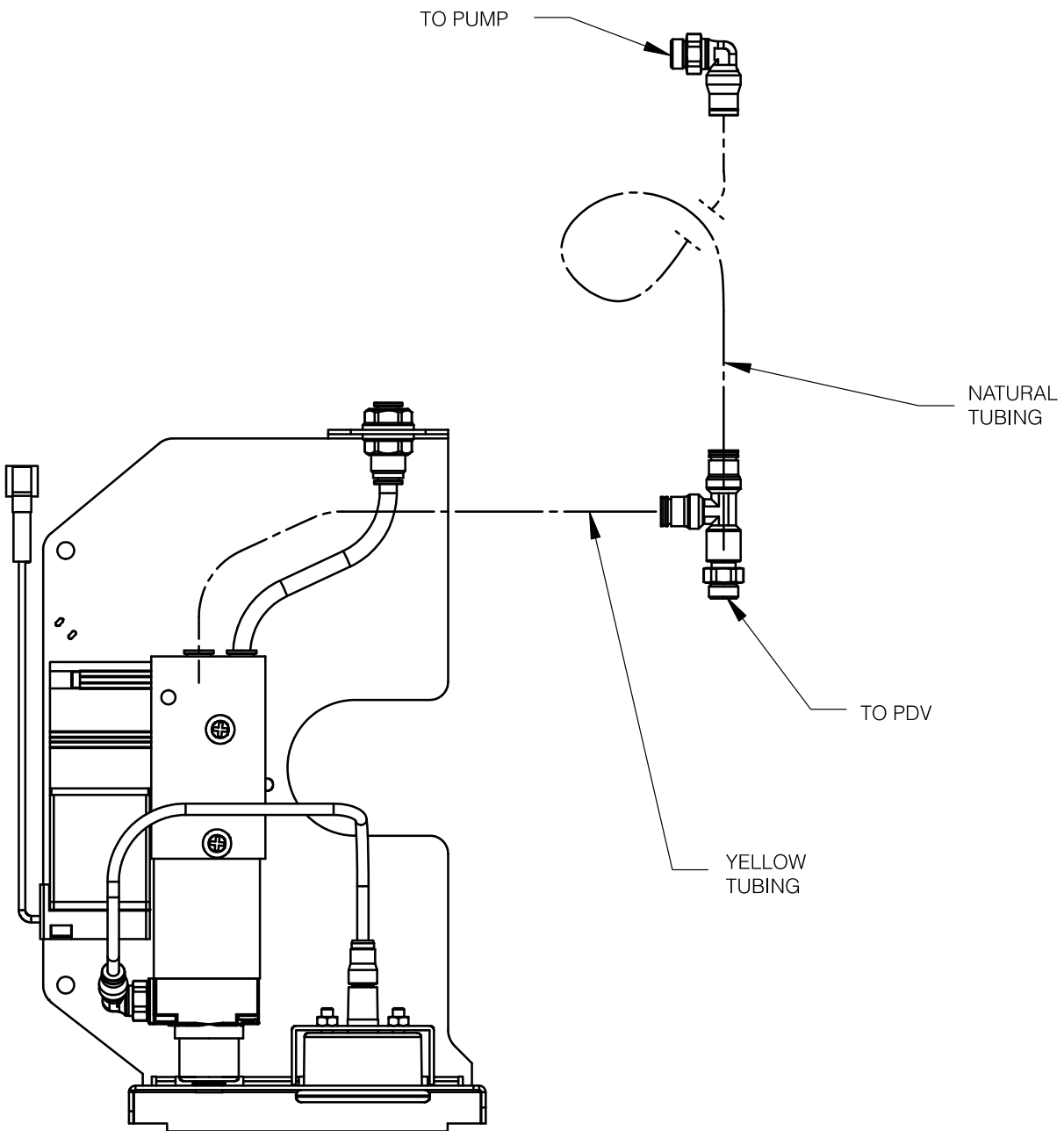


Figure 6-3 Double-acting pump pneumatic flow diagram

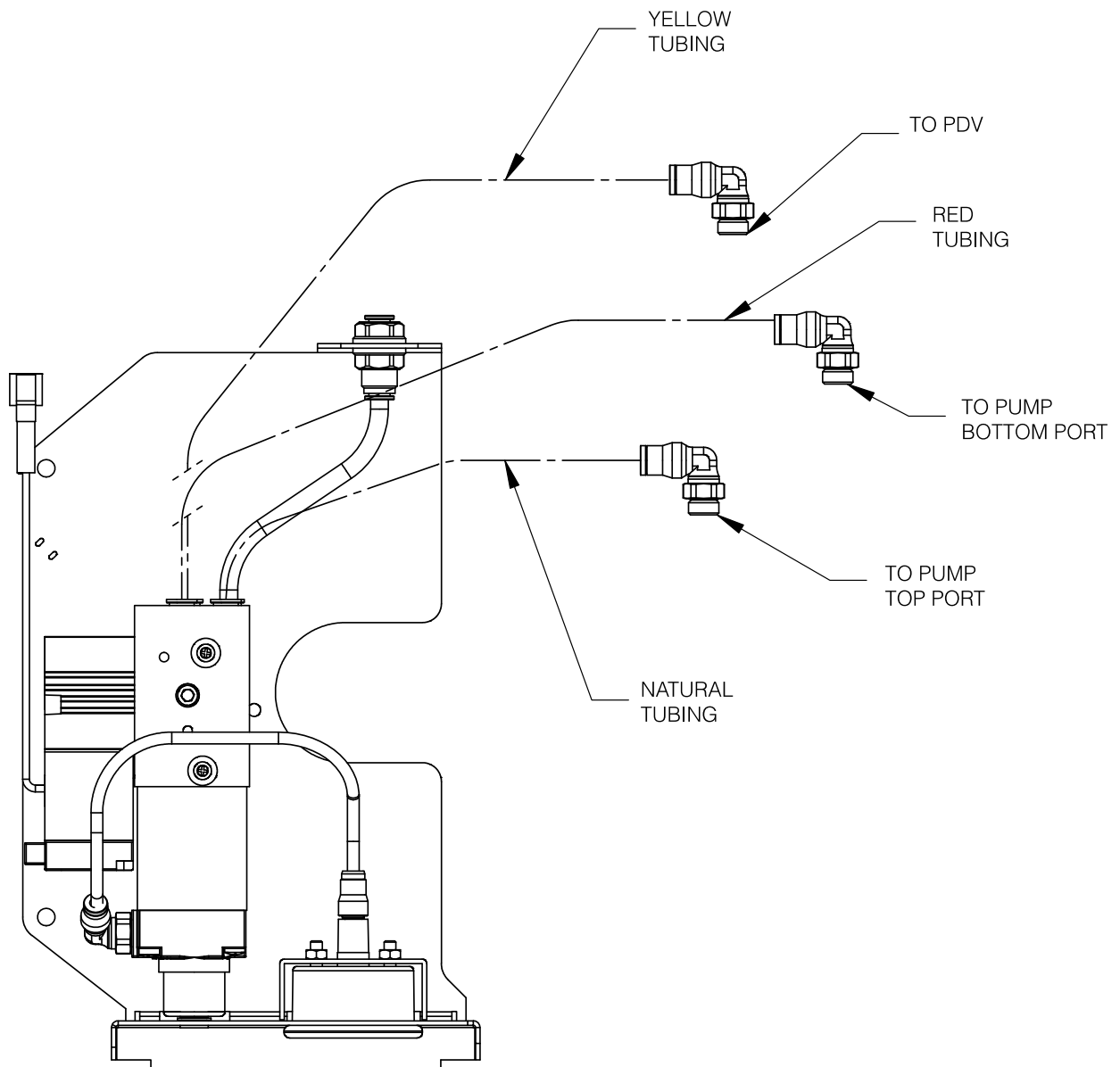


Figure 6-4 Single-acting pump pneumatic flow diagram

Diagnostic Procedures

Use these diagnostic procedure when directed by the troubleshooting flowchart. If a diagnostic procedure fails to identify or correct the problem, return to the troubleshooting flowchart or contact your Nordson representative for technical assistance.

DP.1 Isolate a Failed Control Component

1. De-energize the melter. Refer to Section 1, *Safety*.

See Figure 6-1.

2. Disconnect the ribbon cable (P/N 1018283) from the main board.
3. Remove all of the hose/applicator modules.
4. Re-energize the melter.
5. Check LED DS5 on the main board, and then do *one* of the following:
 - If DS5 does *not* illuminate, replace the main board (P/N 1054008).
 - If DS5 does illuminate, go to step 6.
6. Complete the following steps to isolate the cause of the problem by checking individually checking *each* of the components that were disconnected from the main board in steps 2 and 3 (CPU and each hose/applicator module).
 - a. De-energize the melter.
 - b. Reconnect each component (ribbon cable, and then each hose/applicator module).
 - c. Re-energize the melter.
 - d. Observe LED DS5 (main board).

Replace the component (CPU or hose/applicator module) that causes LED DS5 *not* to illuminate when the melter is re-energized.

DP.2 Check the Tank or Manifold RTD

1. Check the left display to determine which RTD (tank or manifold) is faulting. The display indicates 1 if the tank RTD is faulting or 2 if the manifold RTD is faulting.
2. De-energize the melter. Refer to Section 1, *Safety*.

NOTE: If the melter has already cooled down, solidified hot melt within the pump/manifold will prevent you from removing the pump. To remove the pump, you must reheat the melter. Refer to *Reheating the Melter During an F1 Fault* at the end of this procedure.

See Figure 6-2.

3. Remove the RTD from its retention slot.
 - For the tank RTD, refer to *Remove the Tank RTD*.
 - For the manifold RTD, refer to *Remove the Manifold RTD*.
4. Allow the RTD to cool to room temperature or use a pyrometer to accurately determine the temperature of the RTD.
5. When the temperature of the RTD is known, measure the resistance of the RTD across terminals 1 and 2 (tank RTD) or 3 and 4 (manifold RTD).

See Figure 6-5.

6. Determine the expected resistance of the RTD at the known temperature. Compare the expected and measured resistance values and then do *one* of the following:
 - If the measured resistance is within the expected resistance range, the RTD is functioning properly. Replace the main board (P/N 1054008).
 - If the measure resistance is not within the expected resistance range, the RTD is defective. Replace the RTD (P/N 1028320).

Reheating the Melter During an F1 Fault

1. While holding both the **Setup** key and the **Tank** key, cycle the system control switch on and then off.

The left display will flash dashes at one second intervals to indicate that the melter is heating in the override mode. The melter will remain in the override mode for 20 minutes and then automatically switch off.



WARNING! Risk of electrocution!

The control switch will remain in the on position when the melter automatically switches off after 20 minutes. Ensure that the control switch is moved back to the off position.

2. If necessary, repeat step 1 to continue reheating the melter.

Remove the Tank RTD

1. De-energize the melter. Refer to Section 1, *Safety*.

See Figure 6-2.

2. Remove the front panel.
3. While gently pulling the retention clip away from the RTD, slide the RTD out of its retention slot.

NOTE: If the RTD is functioning properly, apply thermal compound (provided in RTD service kit P/N 1028320) to the RTD before replacing it in the retention slot.

Remove the Manifold RTD

1. Relieve system pressure. Refer to Section 5, *Relieving System Pressure*.

See Figure 6-6.

2. Isolate the pump from the manifold by rotating the isolation valve handle to its full vertical position (valve closed).
3. Remove the three pump-mounting bolts from the front of the pump body.
4. Rotate the top of the pump slightly toward the front of the melter, and then pull the pump up and away from the manifold.

NOTE: The face of the pump body contains two M6 threaded holes. Bolts can be threaded into these holes to gain leverage when removing the pump.

5. Remove the air line from the back of the pump.
6. Lift the pump clear of the melter.
7. Remove the RTD from its retention slot.
8. To replace the RTD and pump, reverse the order of steps 2 through 7.

CAUTION! Before replacing the pump, ensure that the cross-over tube is in-place between the pump and the manifold.

NOTE: Before replacing the RTD, apply thermal compound (P/N 1023441) to the RTD and its retention slot. To avoid damage to the RTD, ensure that the RTD is correctly inserted into its retention slot before replacing the pump.

DP.3 Check the Operation of the Power Relay or Thermostats

The pre-conditions for this diagnostic procedure are as follows:

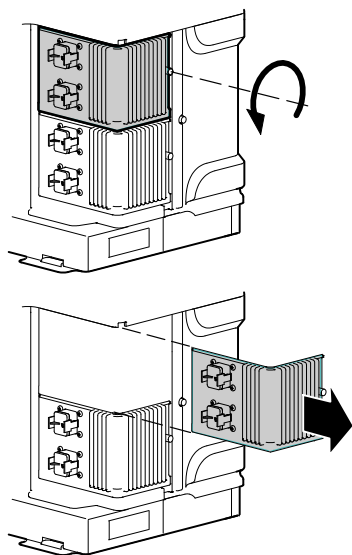
- The heater LED is illuminated.
- Indicator DS2 on the main board is *not* illuminated.
- Indicators DS5 and DS6 on all hose/applicator modules are *not* illuminated.

1. De-energize the melter. Refer to Section 1, *Safety*.
2. Remove all of the hose/applicator modules.
3. Re-energize the melter.

NOTE: If an F1 fault re-occurs after re-energizing the melter, reset the melter and turn the heaters back on.

4. Press the **Heaters** key.

See Figure 6-1.



Removing a
hose/applicator module

5. Check indicator DS2 on the main board, and then do *one* of the following:
 - If indicator DS2 *does* illuminate, go to step 6
 - If indicator DS2 does *not* illuminate, go to step 7
6. Locate a failed hose/applicator module by *individually* replacing and checking each module as follows:
 - a. De-energize the melter.
 - b. Replace the hose/applicator module.
 - c. Re-energize the melter.
 - d. Check if LED DS5 illuminates.

Replace the hose/applicator module that causes LED DS5 *not* to illuminate when the melter is re-energized.

7. Complete *one* or *both* of the following checks to determine if the main board or a thermostat has failed:
 - a. Check for 21–27 VDC across receptacle J9, pins 1 and 6. If the voltage is *incorrect*, replace the main board, otherwise go to b.
 - b. Check for 21–27 VDC across receptacle J9, pins 2 and 6. If the voltage is *incorrect*, one or both of the thermostats or the wire harness connected to receptacle J7 has failed. Refer to *DP.6 Check the Resistance of the Tank/Manifold Thermostat*. If the voltage is *correct*, replace the main board.

DP.4 Check the Operation of the Tank or Manifold TRIAC

See Figure 6-1.



WARNING! Risk of electrocution! Ensure that disconnect switch that serves the melter is in the off position and locked.

1. De-energize the melter. Refer to Section 1, *Safety*.
2. Remove the protective rubber cover from the tank or the manifold heater terminals (Whichever component is faulting).
3. Re-energize the melter and turn the heaters back on.
4. Press the **Heaters** key.
5. While watching LEDs DS1 and DS3 on the main board, measure the voltage across the heater terminals as follows:
 - For an F2 fault, voltage across the terminals should be within 10 VAC of the voltage being supplied to the melter when DS1 and DS3 are illuminated.
 - For an F3 fault, voltage across the terminals should be less than 5 VAC when DS1 and DS3 are *not* illuminated.

Replace the main board if either of the above voltage conditions are incorrect (P/N 1054008).

DP.5 Check the Resistance of the Tank and Manifold Heaters



WARNING! Risk of electrocution! Ensure that disconnect switch that serves the melter is in the off position and locked.

1. De-energize the melter. Refer to Section 1, *Safety*.

See Figure 6-1 and 6-5.

2. Disconnect the power harness plug (P/N 1024529) from receptacle J6 on the main board and receptacle J4 on the tank drive board.
3. Measure the resistance across pins 1 and 2 (tank) or pins 3 and 4 (manifold) on the power harness plug, and then do *one* of the following:
 - If the resistance *is* within 23–30 ohms for the tank or 46–58 ohms for the manifold, then go to step 4.
 - If the resistance is *not* within range, go to step 8.
4. Individually check that the resistance between the chassis and pins 1 and 2 (tank) or pins 3 and 4 (manifold) on the power harness plug, and then do *one* of the following:
 - If the resistance is greater than 1 Meg ohm, return to the troubleshooting chart.
 - If the resistance is less than 1 Meg ohm, go to step 5.
5. Remove the front and rear panels from the melter. Refer to Section 5, *Cleaning the Melter*, for the procedure to remove the panels.

DP.5 Check the Resistance of the Tank and Manifold Heaters (contd)

CAUTION! Use two wrenches and minimal force when loosening or tightening the heater terminal connections. Using a single wrench or excessive force to remove or tighten the terminals nuts can damage the heater.

6. Using two wrenches, loosen the nuts that hold the power harness leads to the tank or the manifold heater terminal posts.
7. Individually check that the resistance between the chassis and *each* tank or each manifold heater terminal post, and then do *one* of the following:
 - If the resistance is *greater* than 1 Meg ohm, replace the power harness.
 - If the resistance is *less* than 1 Meg ohm for the tank heater, replace the tank. If the resistance is less than 1 Meg ohm for the manifold, replace the manifold heater. Refer to Section 7, *Parts*.
8. Remove the front and rear panels from the melter. Refer to Section 5, *Cleaning the Melter*, for the procedure to remove the panels.
9. Measure the resistance across the tank heater posts and the manifold heater posts terminals, and then do *one* of the following:
 - If the resistance *is* within 23–30 ohms for the tank or 46–58 ohms for the manifold, then replace the power harness.
 - If the resistance is *not* within range, replace the tank, or replace the manifold heater.

NOTE: The tank heater cannot be replaced independently.

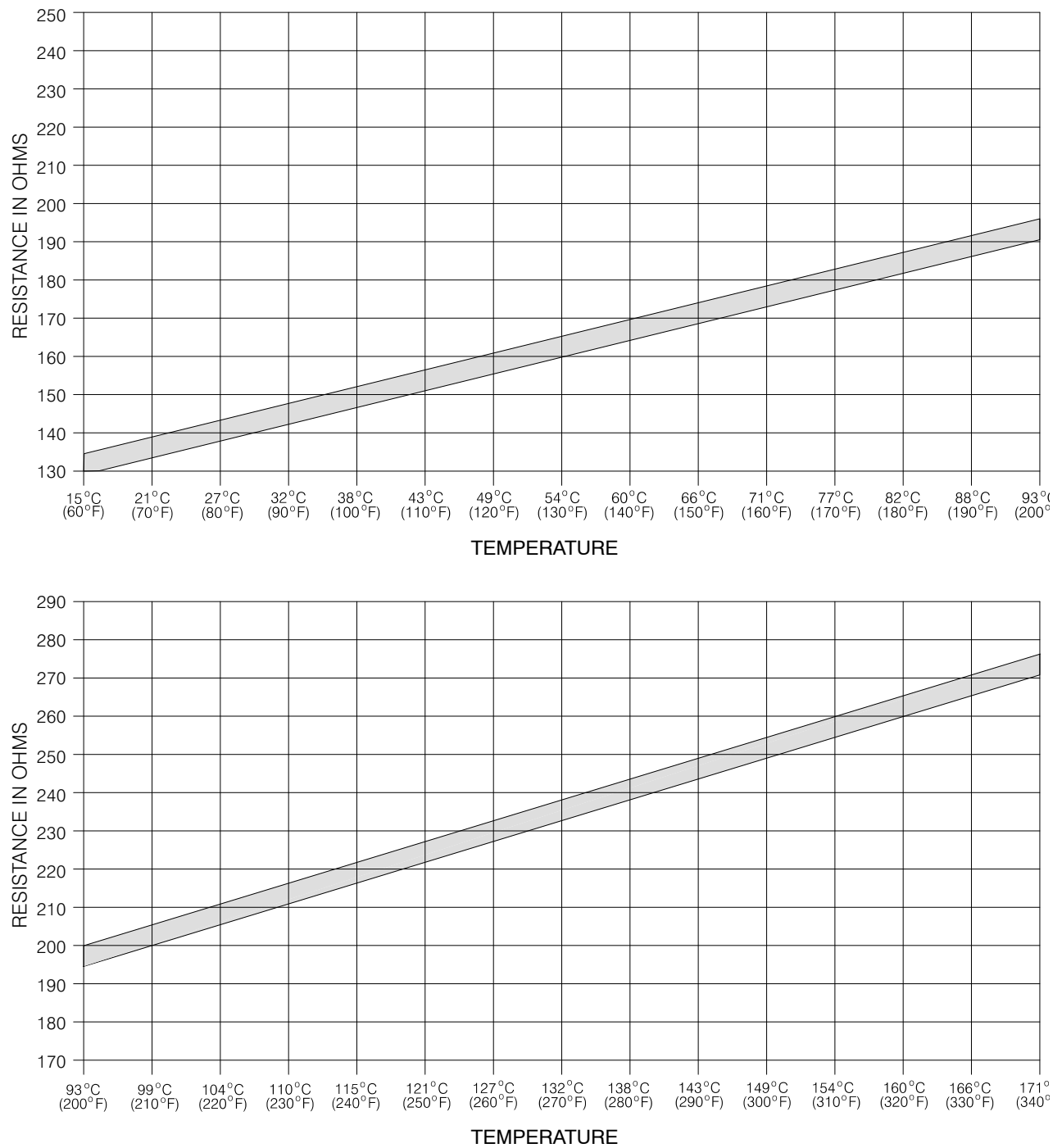


Figure 6-6 RTD resistance vs. temperature

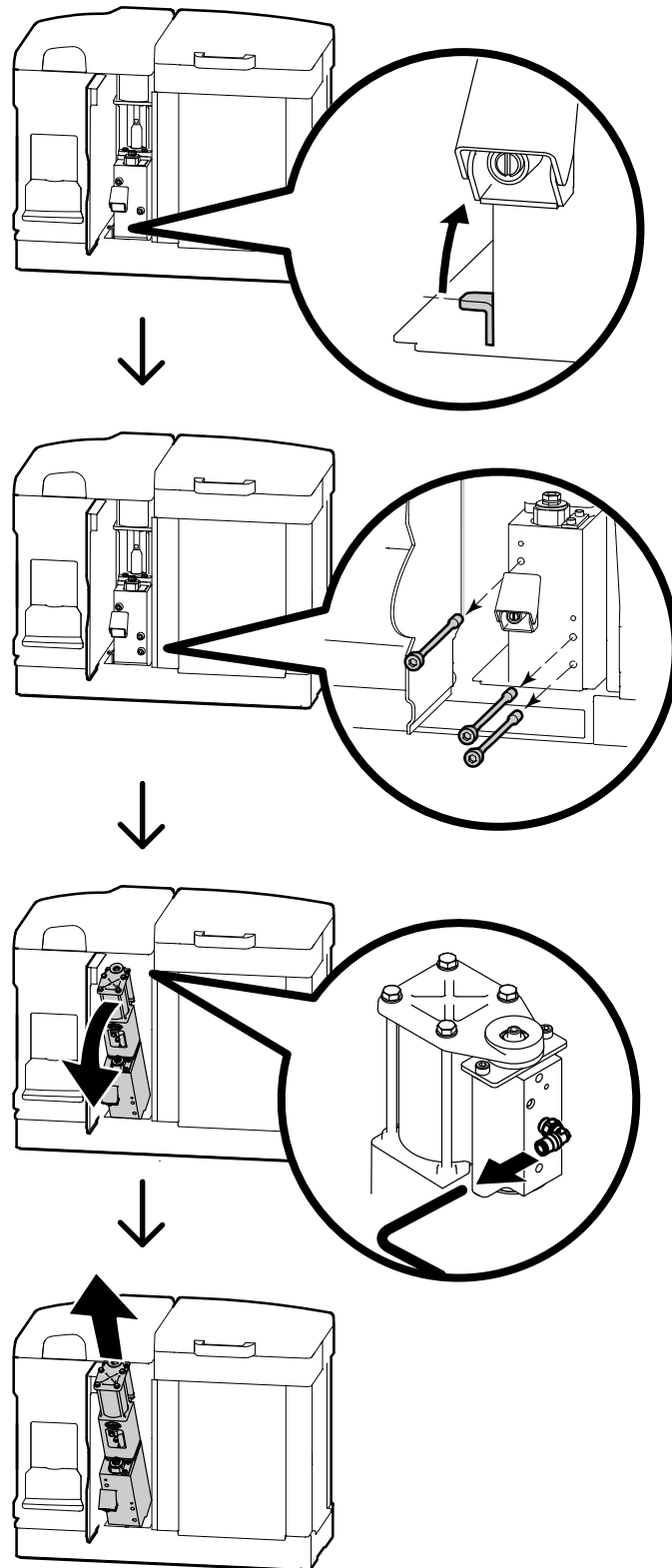
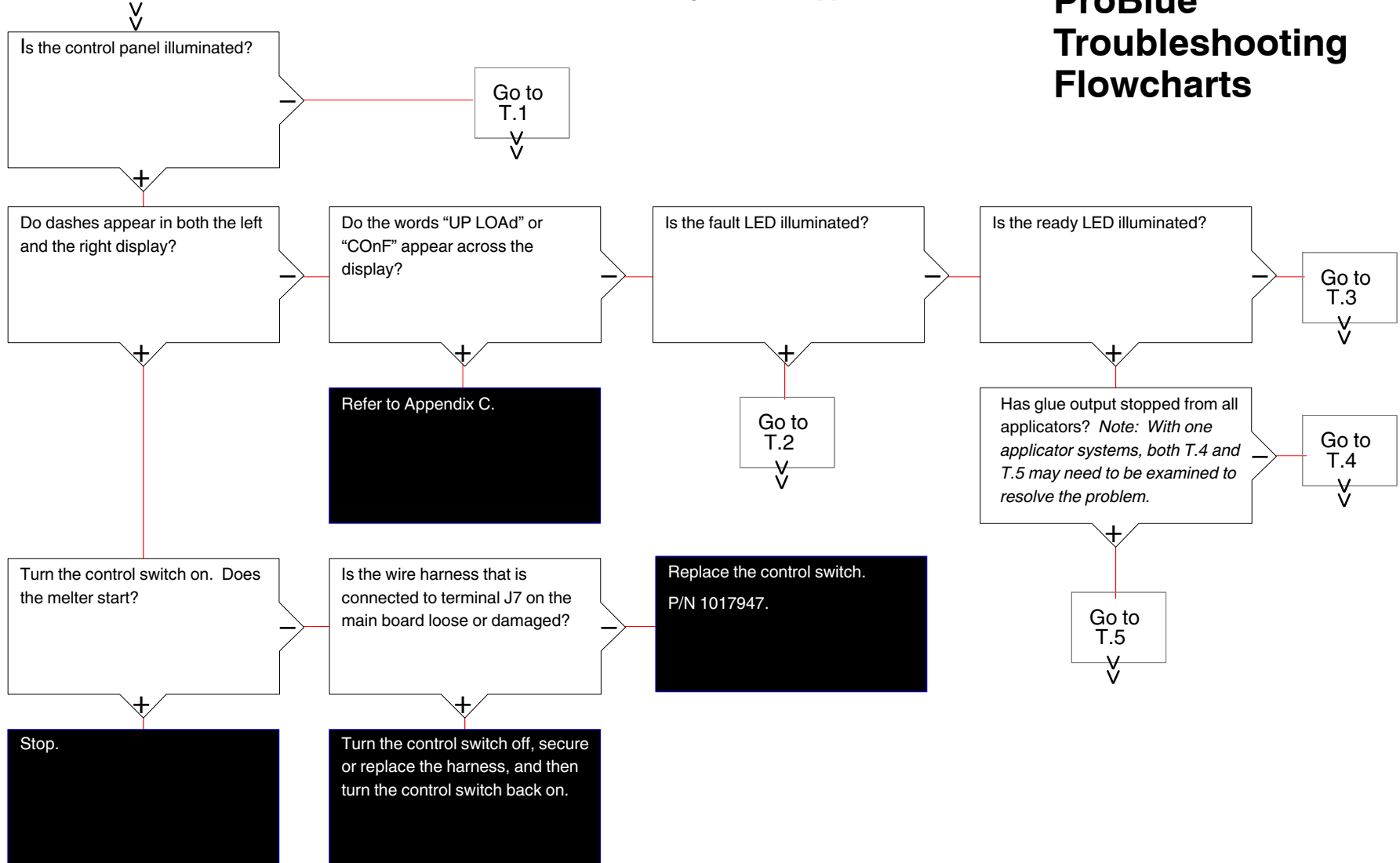


Figure 6-7 Removing the pump (double-acting pump shown)

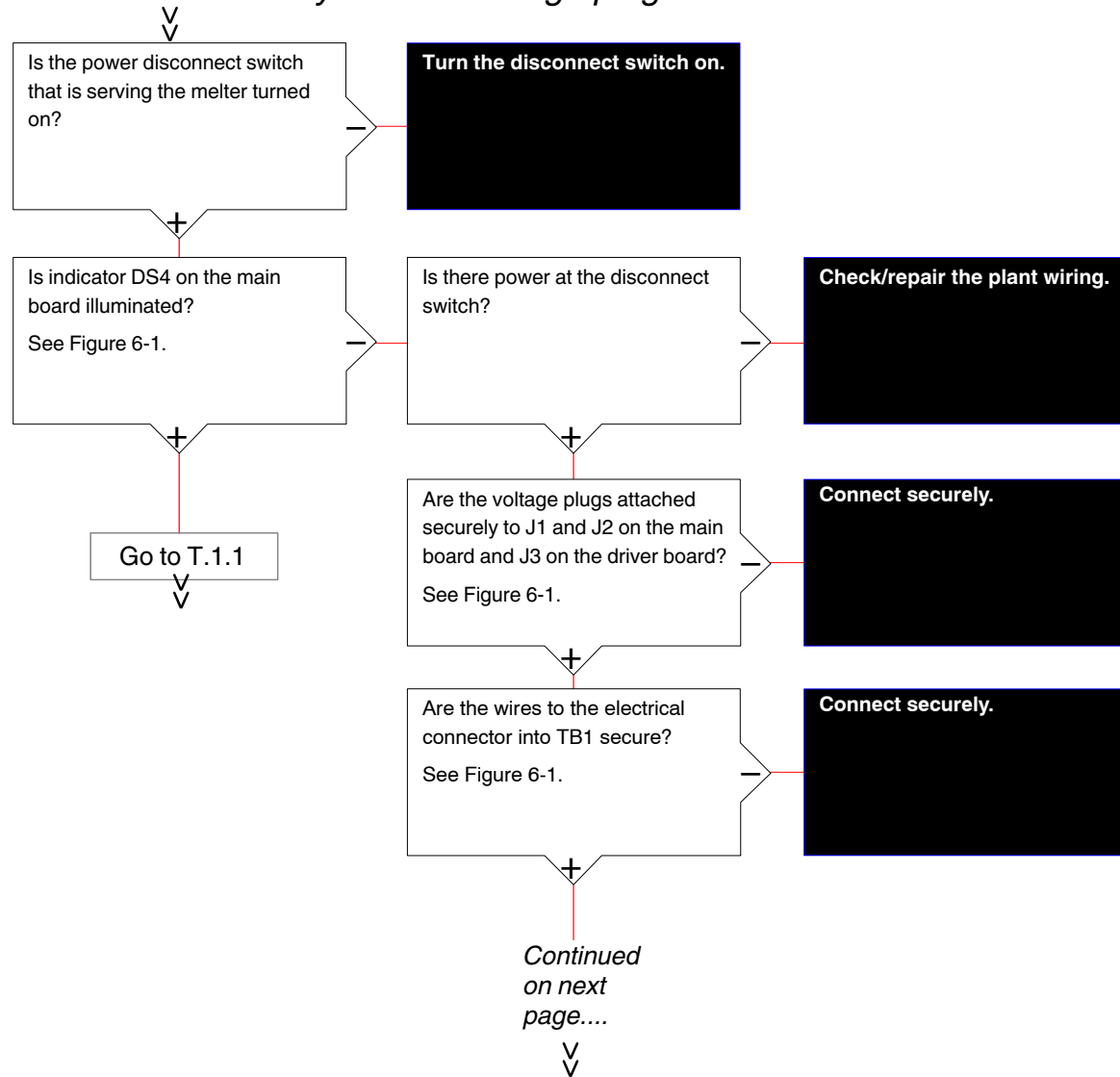
Start

For 400/480V melter troubleshooting, refer to Appendix E.

**ProBlue
Troubleshooting
Flowcharts**

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Quick Check: Verify that the voltage plug is correct



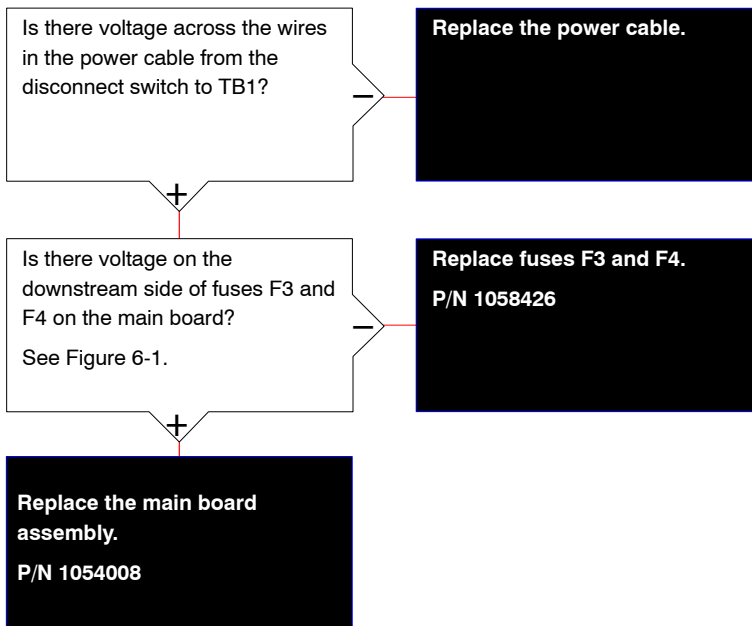
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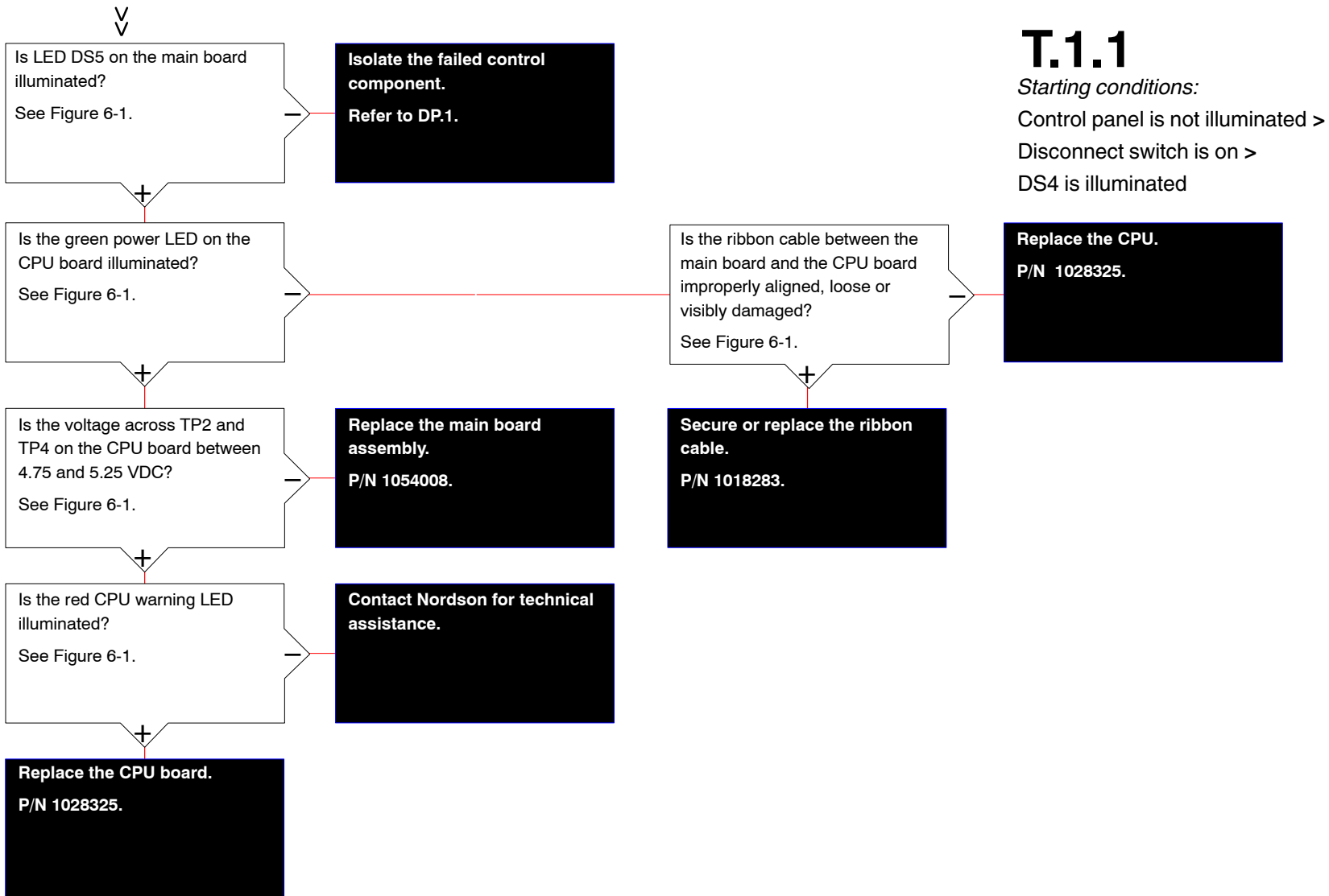
Starting Condition:
Control panel is not illuminated

T.1

Starting Condition:
Control panel is not illuminated

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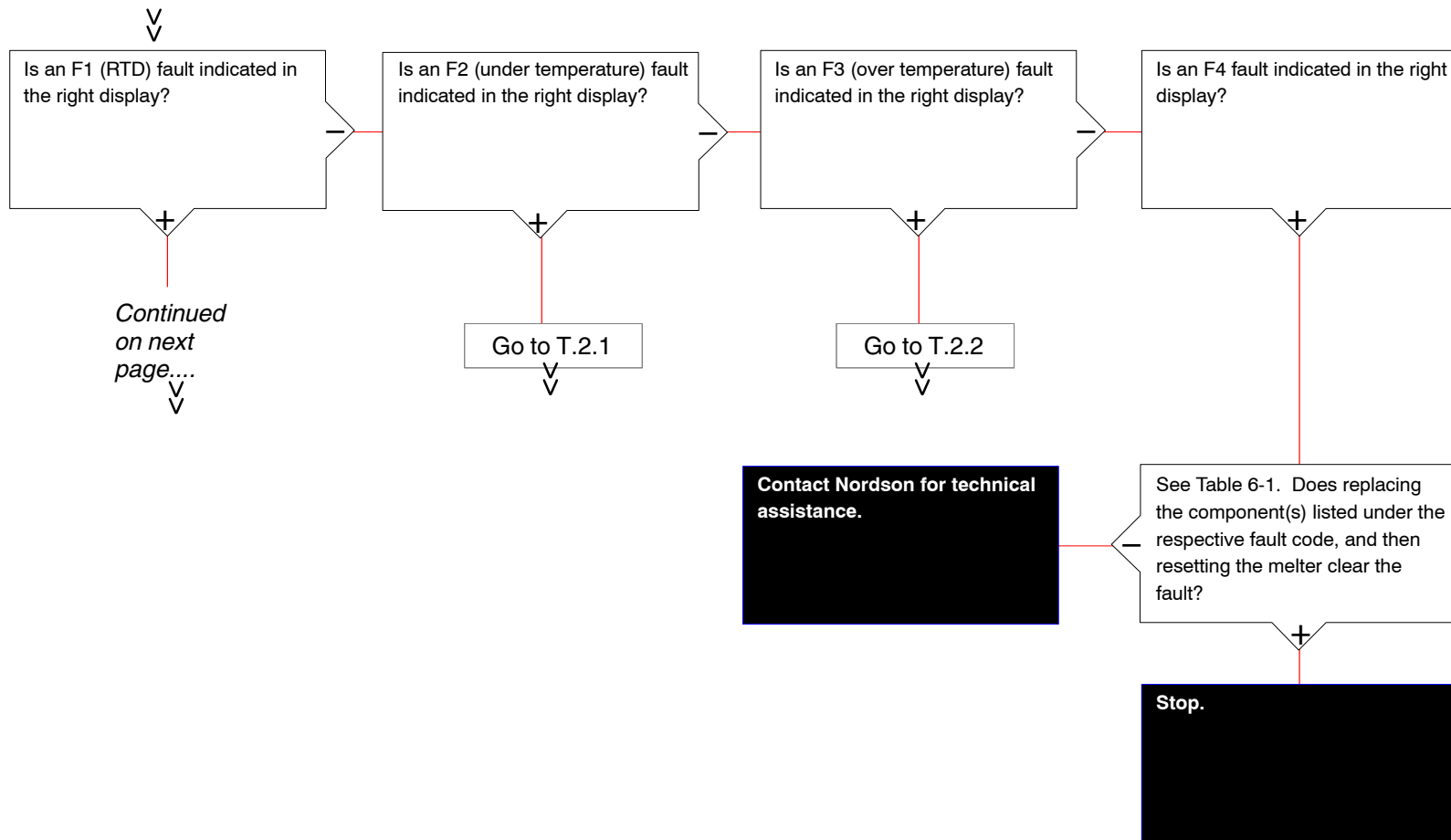




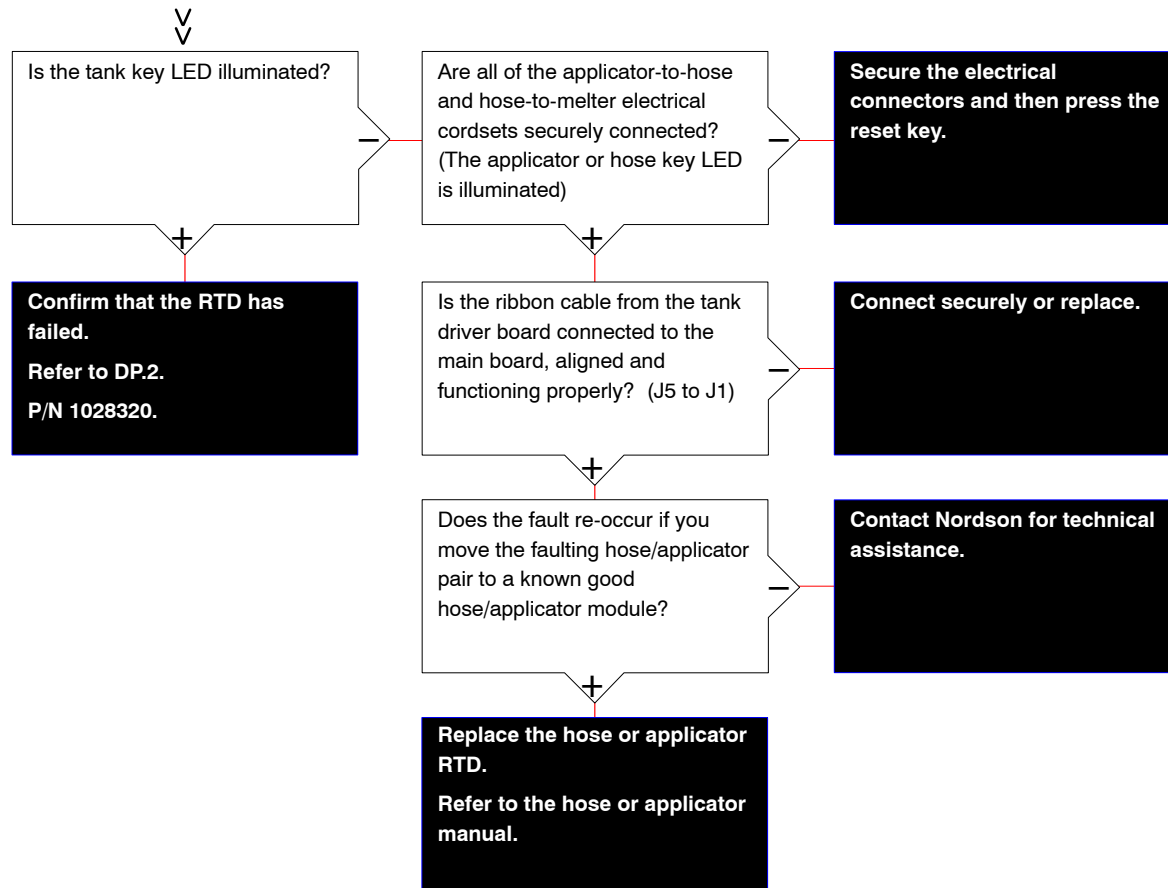
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T.2

Starting Condition:
Fault LED is illuminated



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T.2

Starting Condition:

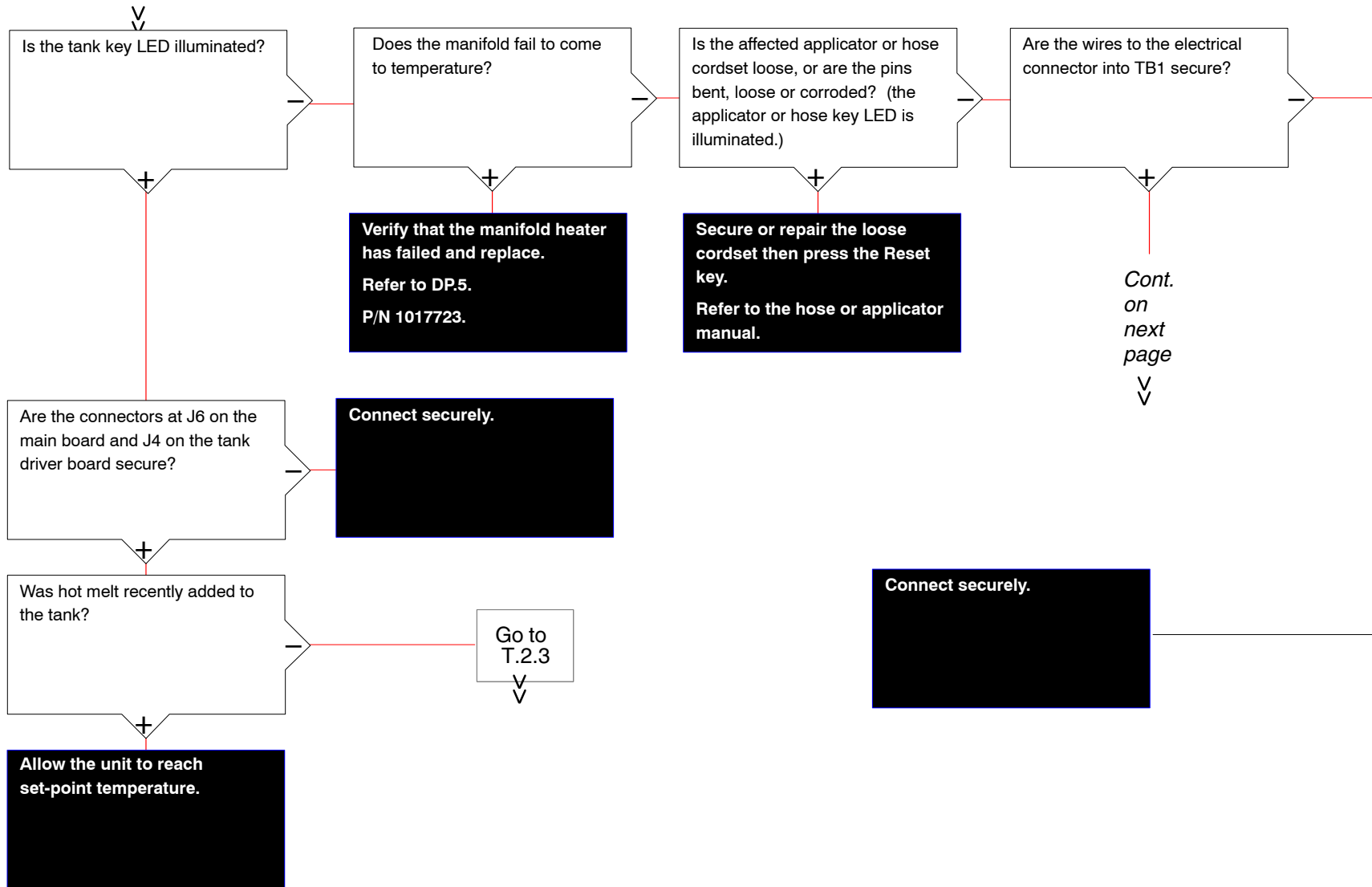
Fault LED is illuminated

Reset the melter and turn the heaters back on. Allow the unit to come to temperature.

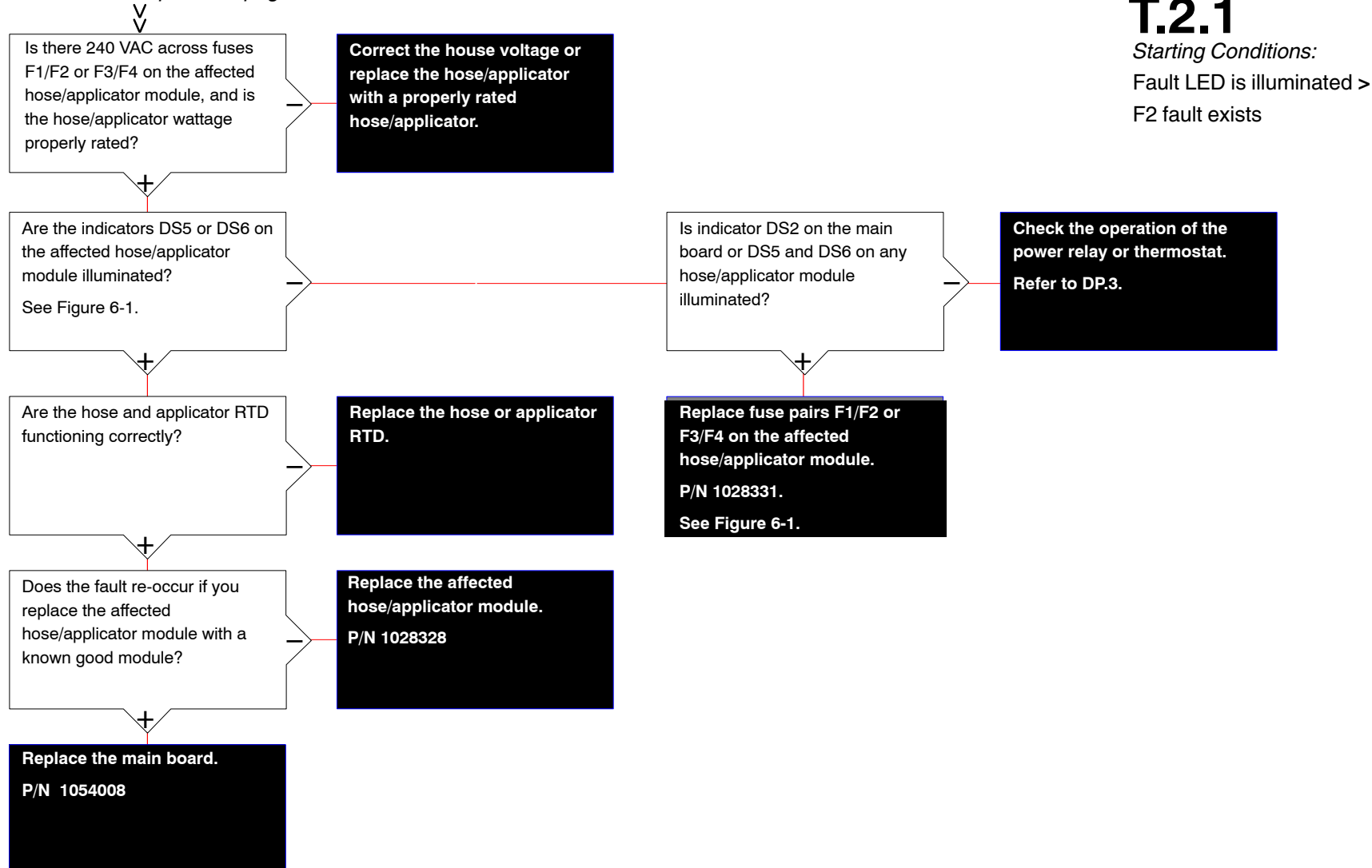
T.2.1

Starting Conditions:

Fault LED is illuminated >
F2 fault exists



Continued from previous page....



T.2.1

Starting Conditions:

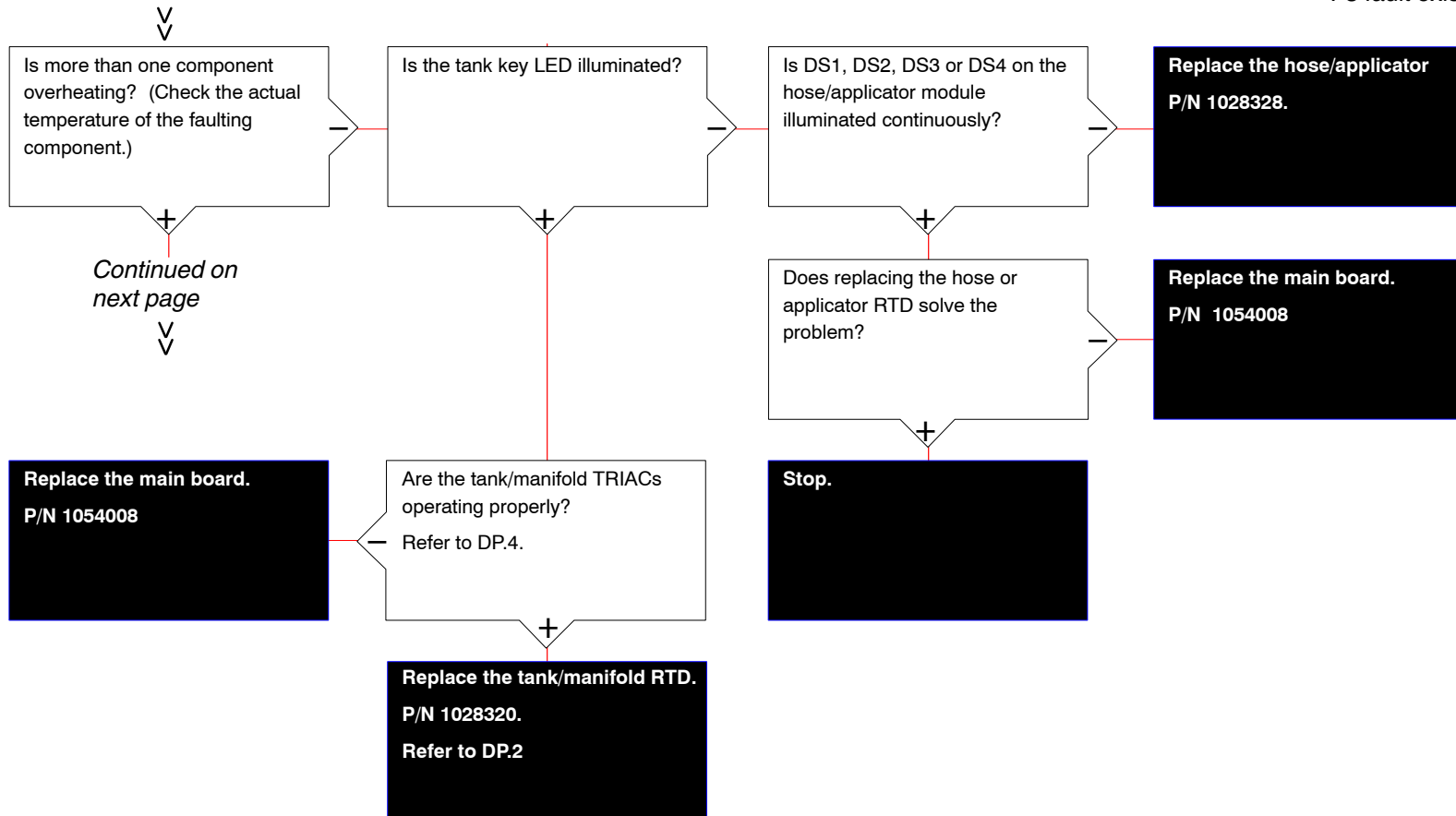
Fault LED is illuminated >
F2 fault exists

T.2.2

Starting conditions:

Fault LED is illuminated >
F3 fault exists

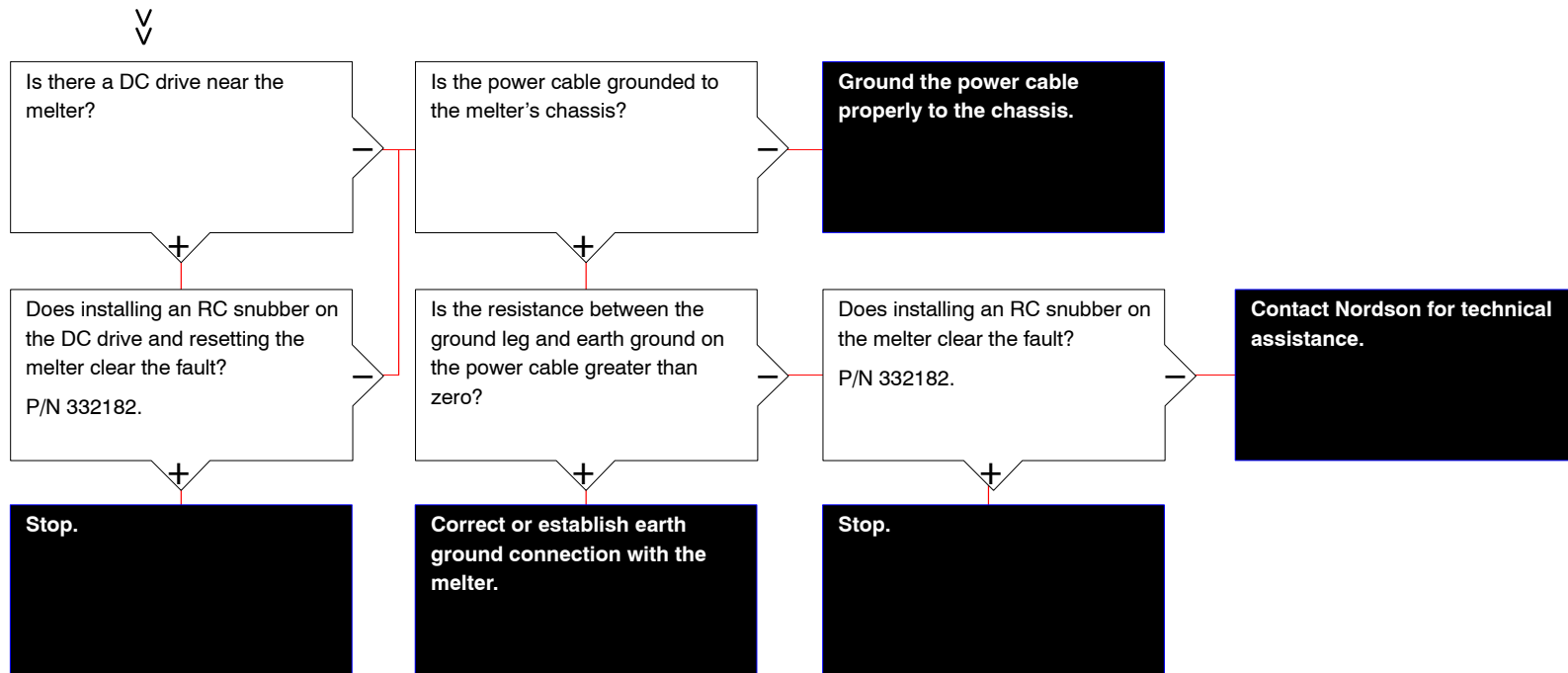
Reset the melter and turn the heaters back on. Allow the unit to come to temperature.



T.2.2

Starting conditions:
Fault LED is illuminated >
F3 fault exists

Continued from previous page....



T.2.3

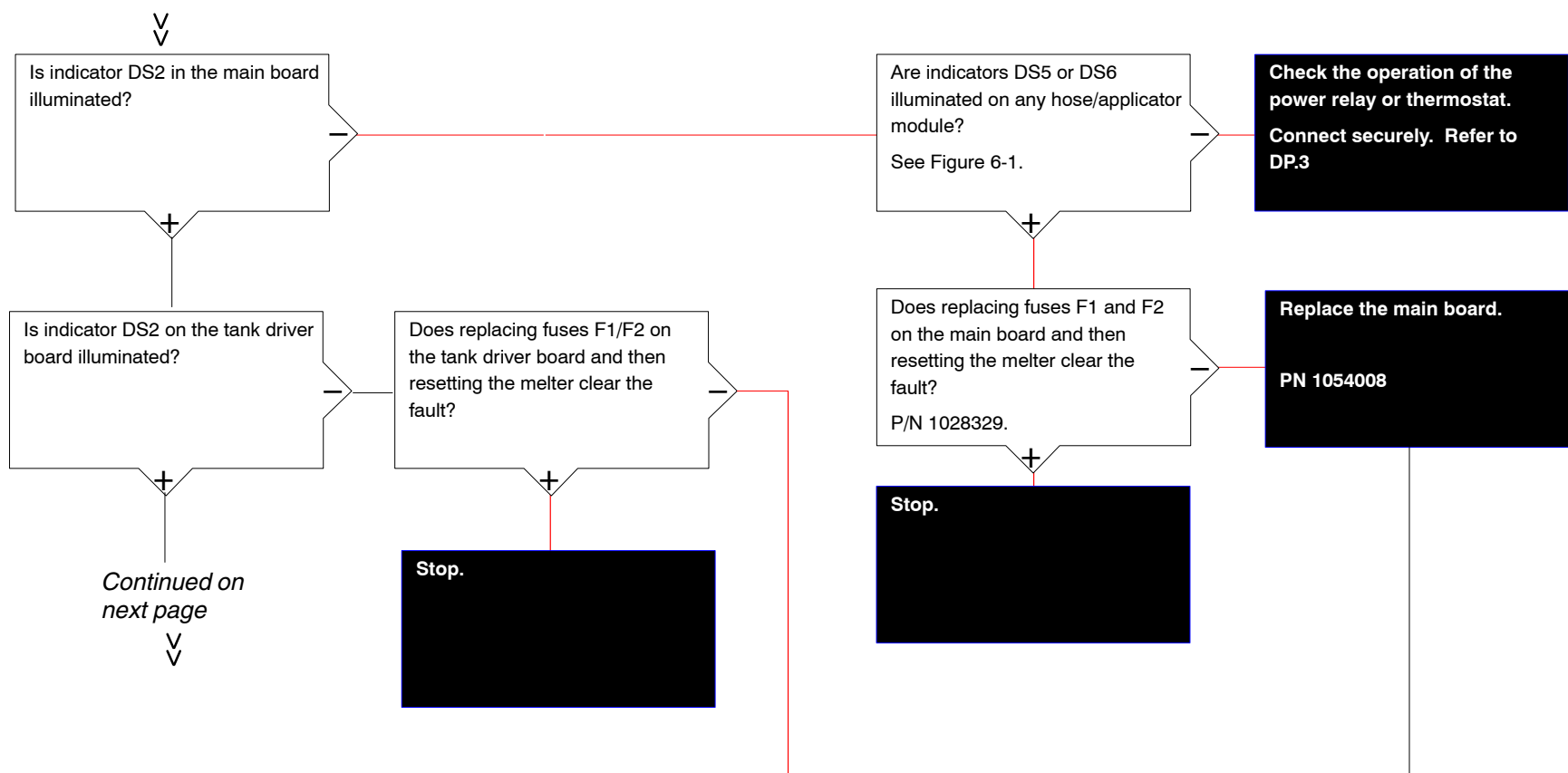
Starting conditions:

Fault LED is illuminated >

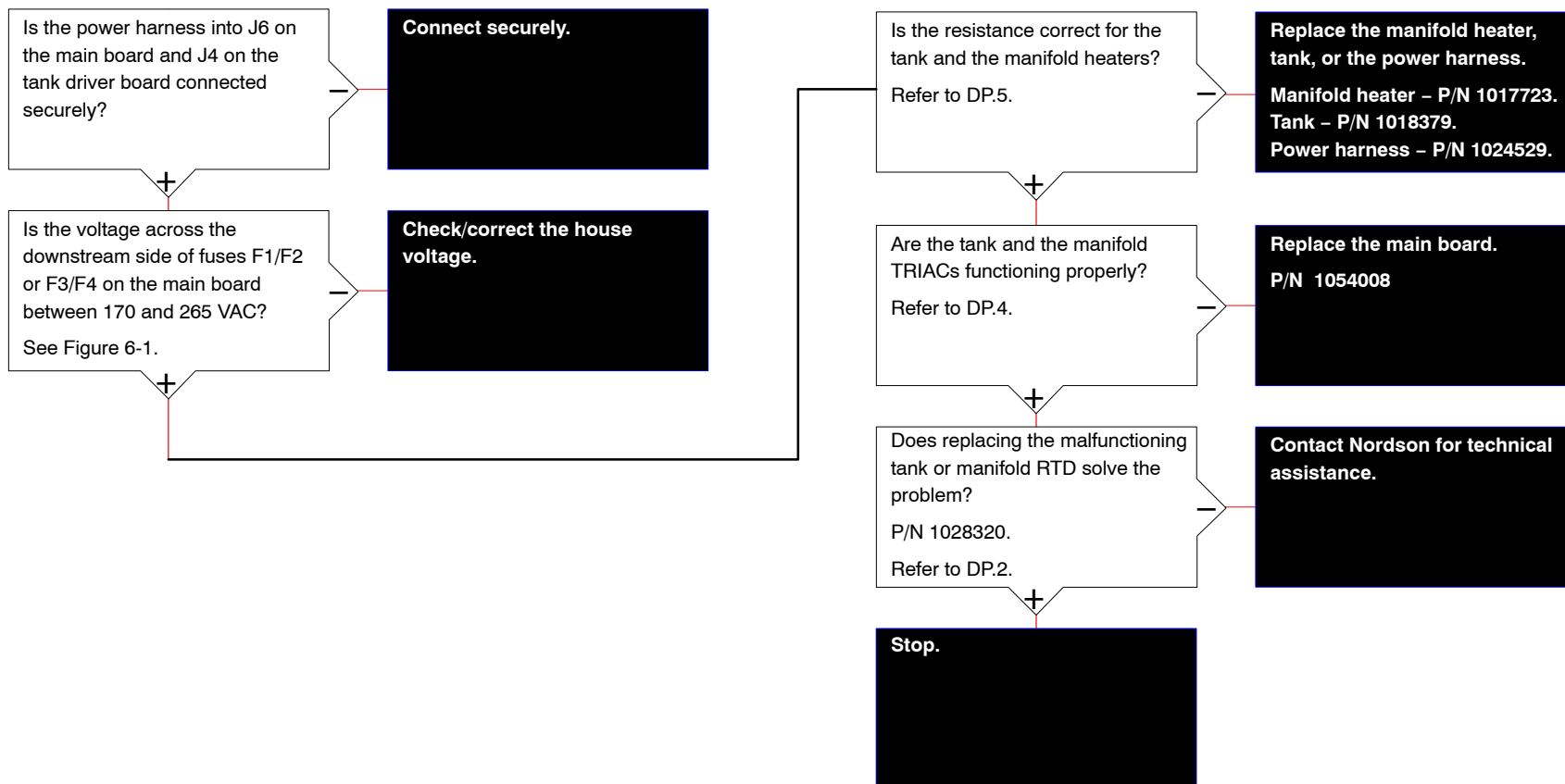
F2 fault exists >

Tank key LED is illuminated >

Hot melt has not been added



Continued from previous page....



T.2.3

Starting conditions:

Fault LED is illuminated >

F2 fault exists >

Tank key LED is illuminated >

Hot melt has not been added

Quick check: Manually activating the heater key or the pump key will override and eliminate remote inputs as the cause of a down condition.

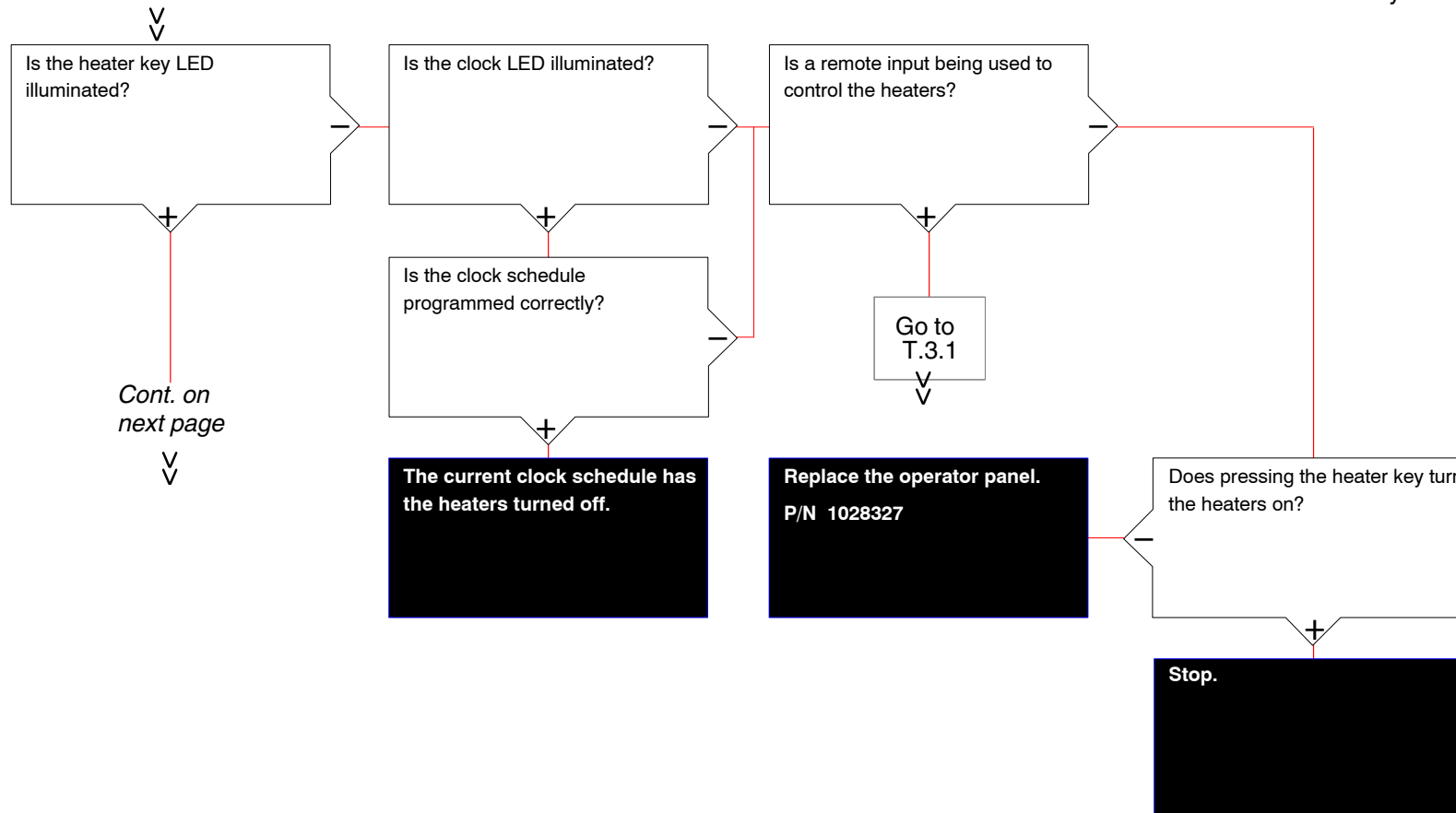
Condition: Save settings and reset the melter to factory default settings. If the melter functions normally, isolate the input or output problem.

T.3

Starting conditions:

No faults >

Ready LED is not illuminated



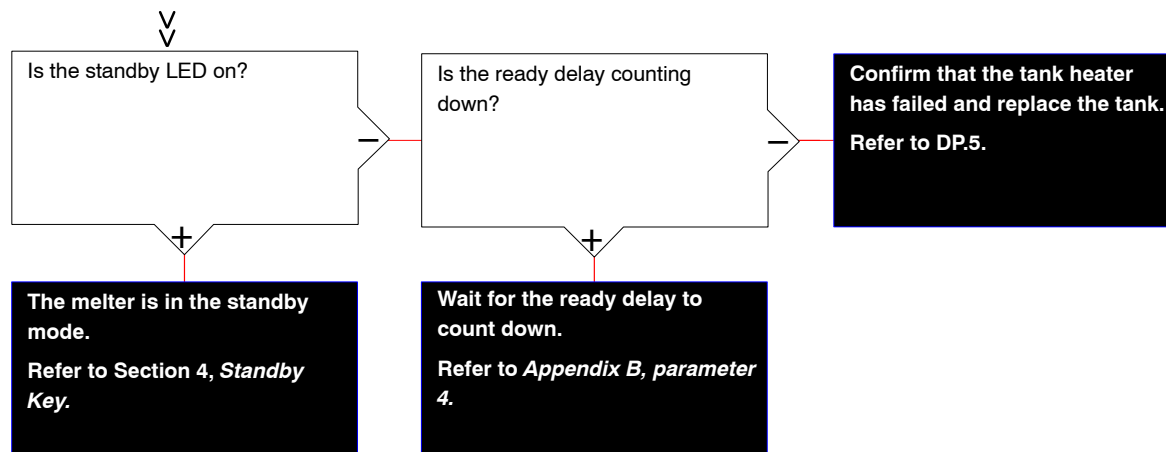
T.3

Starting conditions:

No faults >

Ready LED is not illuminated

Continued from previous page....



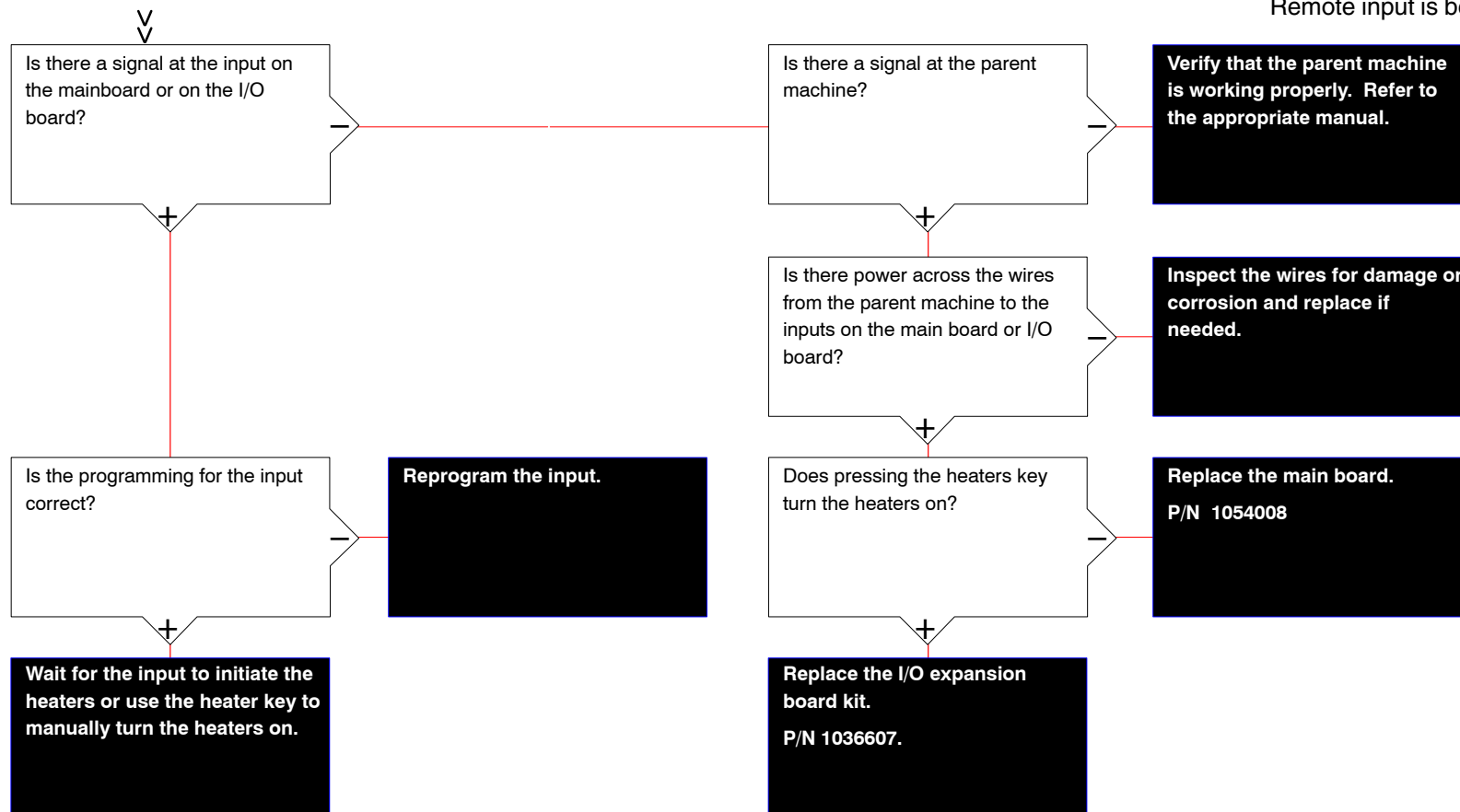
T.3.1

Starting conditions:

No faults >

Ready LED is not illuminated >

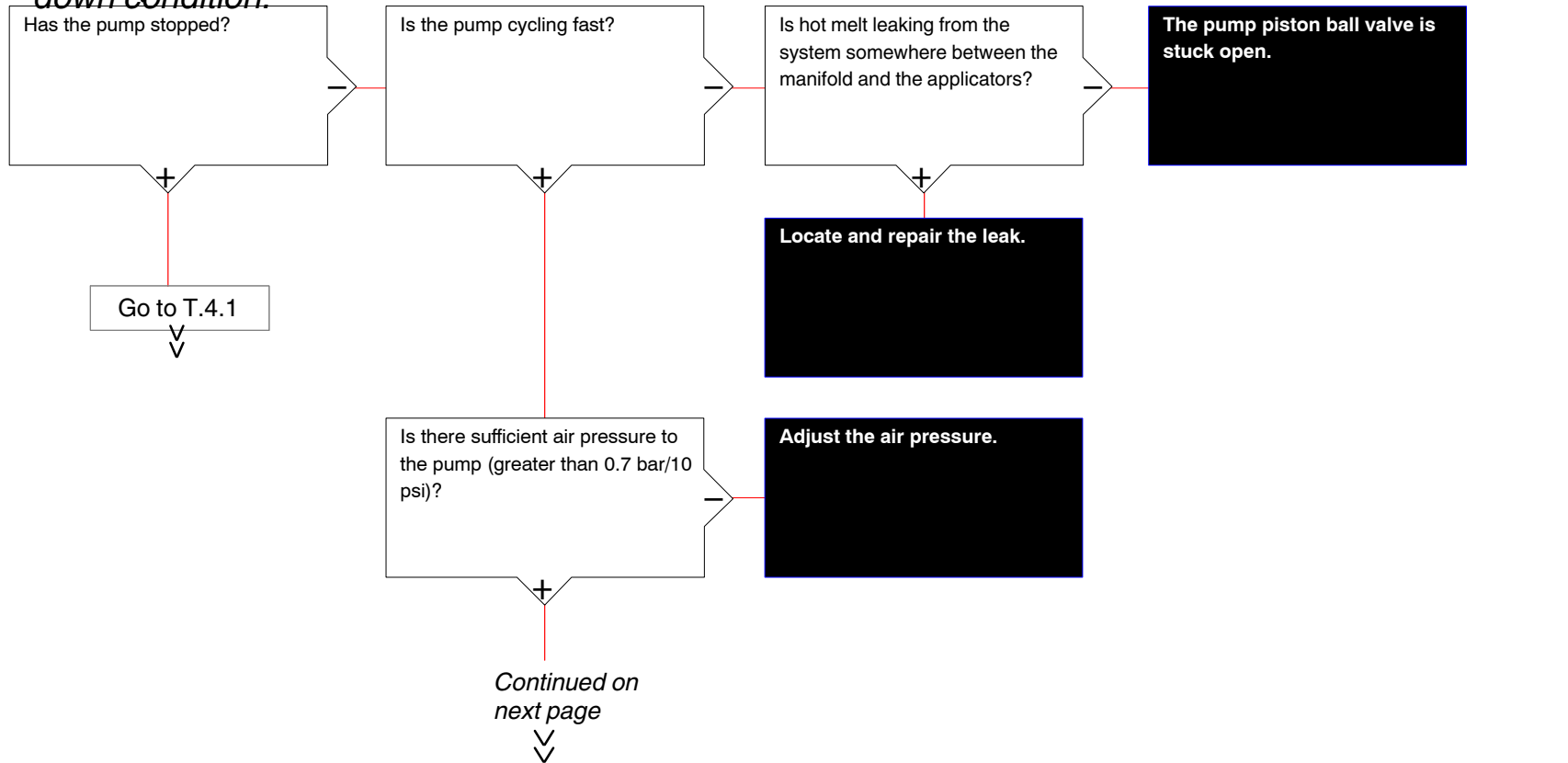
Remote input is being used



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Quick check: Save settings and reset the melter to factory default settings. If the melter functions normally, isolate the input or output problem.

Quick check: Manually activating the heater key or the pump key will override and eliminate remote inputs as the cause of a down condition.



T.4

Starting conditions:

No faults >

Ready LED is illuminated >

No hot melt output from all applicators

T.4

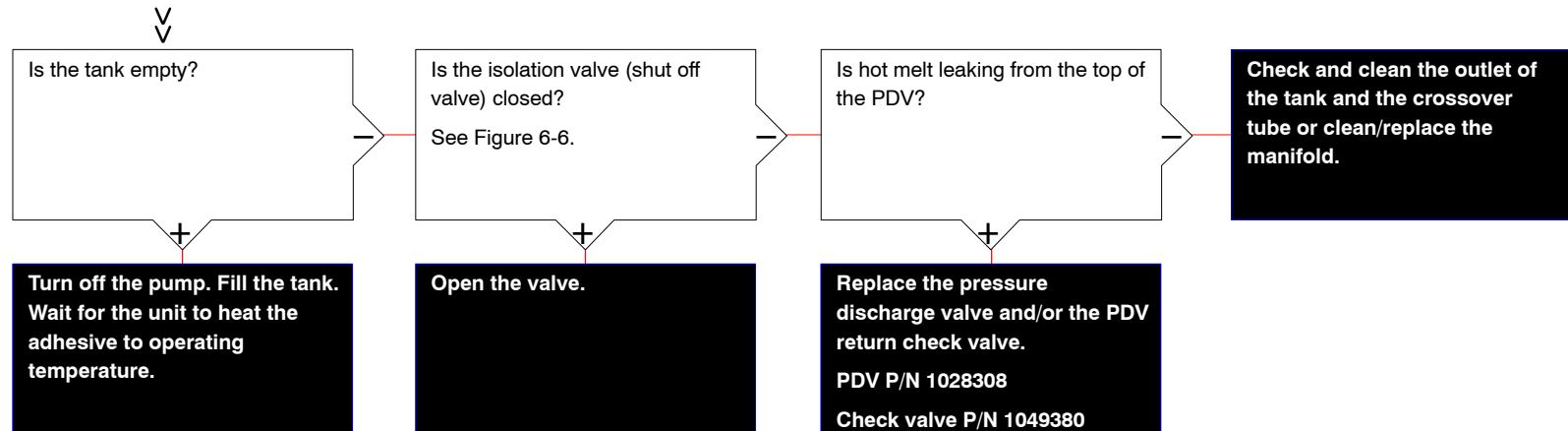
Starting conditions:

No faults >

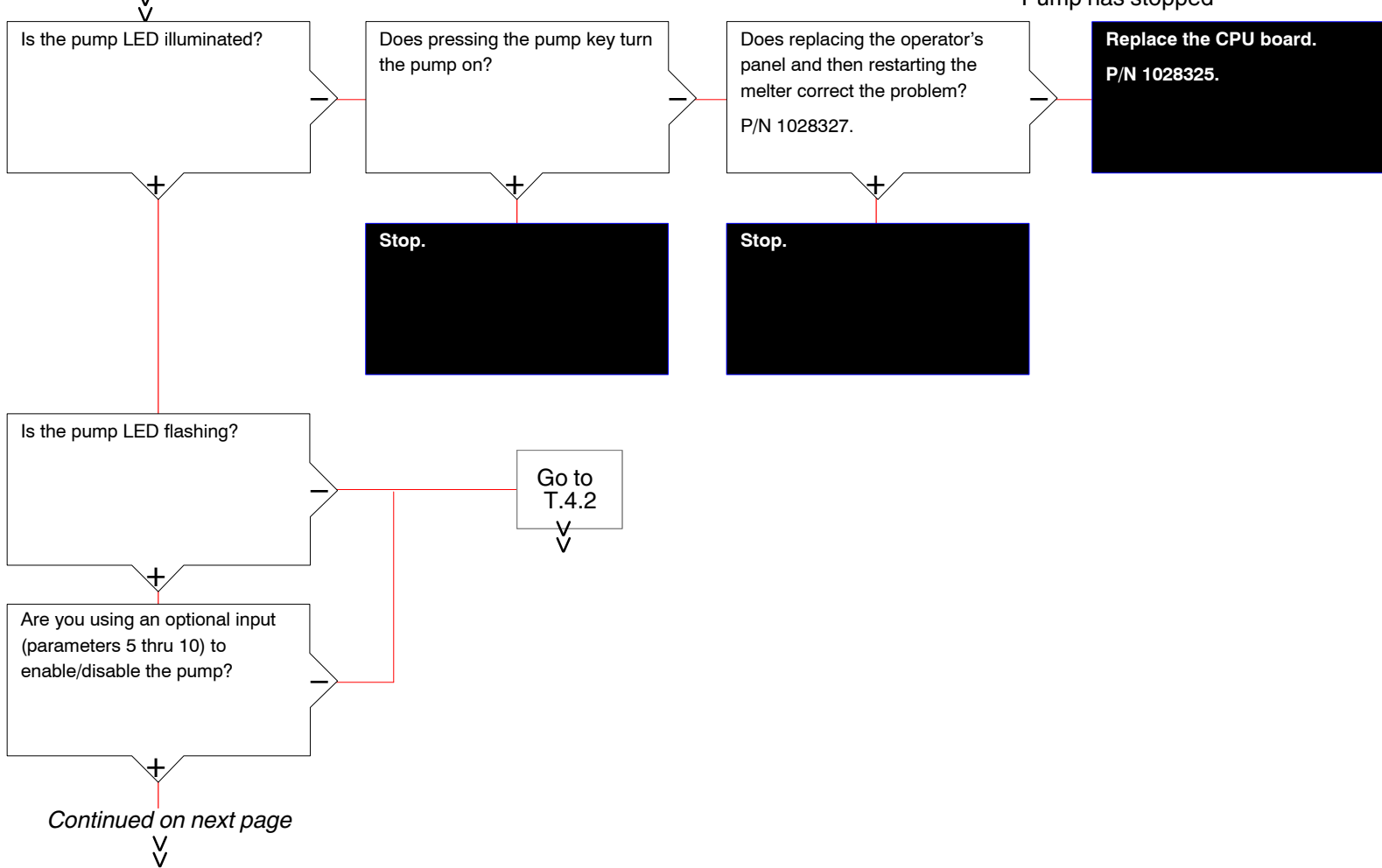
Ready LED is illuminated >

No hot melt output from all applicators

Continued from previous page....



Quick check: Manually activating the heater key or the pump key will override and eliminate remote inputs as the cause of a down condition.



T.4.1

Starting conditions:

No faults >

Ready LED is illuminated >

No hot melt output from all applicators >

Pump has stopped

T.4.1

Starting conditions:

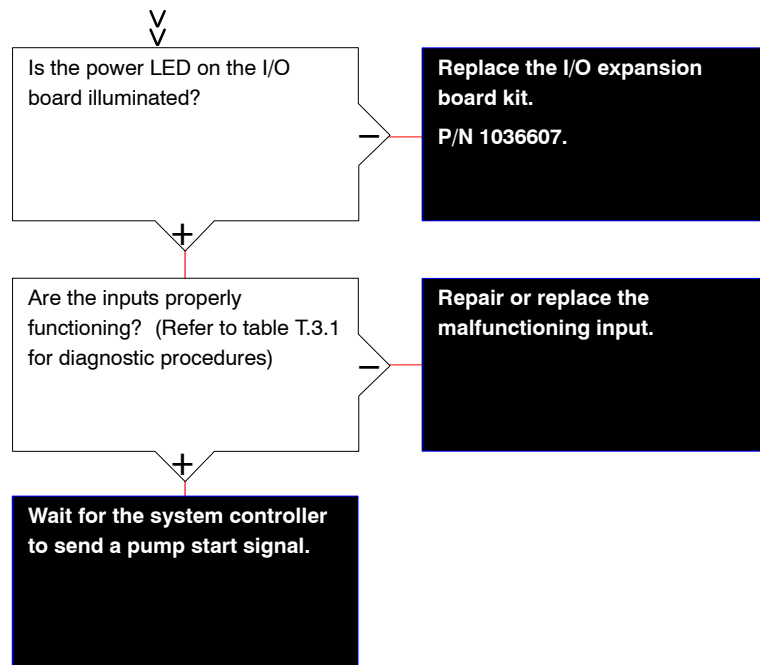
No faults >

Ready LED is illuminated >

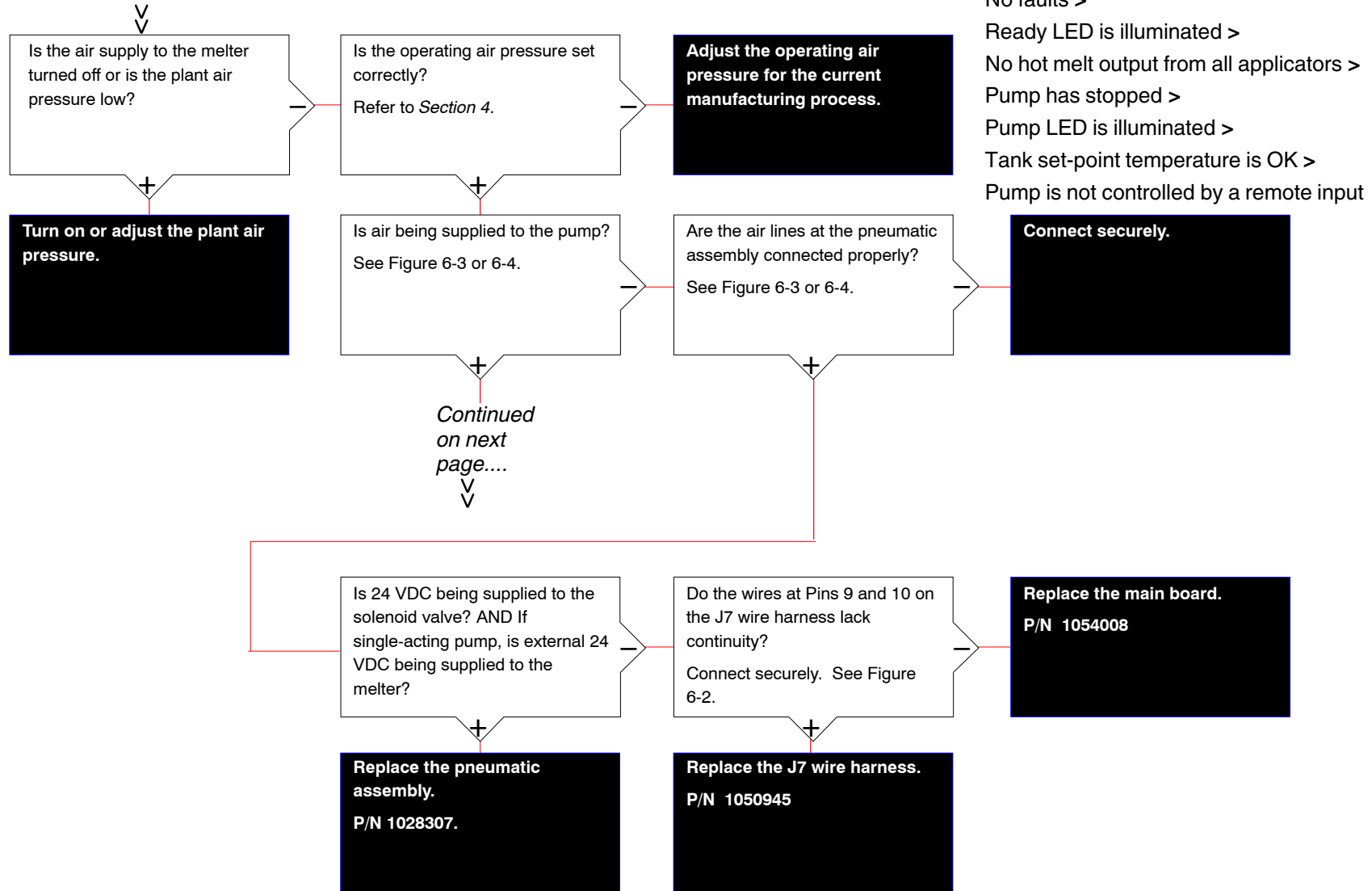
No hot melt output from all applicators >

Pump has stopped

Continued from previous page....



Problem



T.4.2

T.4.2

Starting conditions:

No faults >

Ready LED is illuminated >

No hot melt output from all applicators >

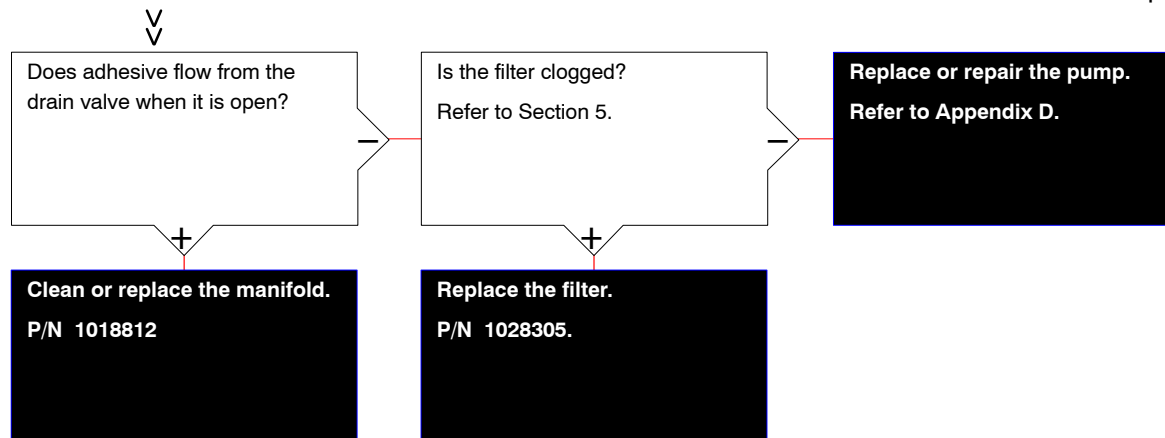
Pump has stopped >

Pump LED is illuminated >

Tank set-point temperature is OK >

Pump is not controlled by a remote input

Continued from previous page....



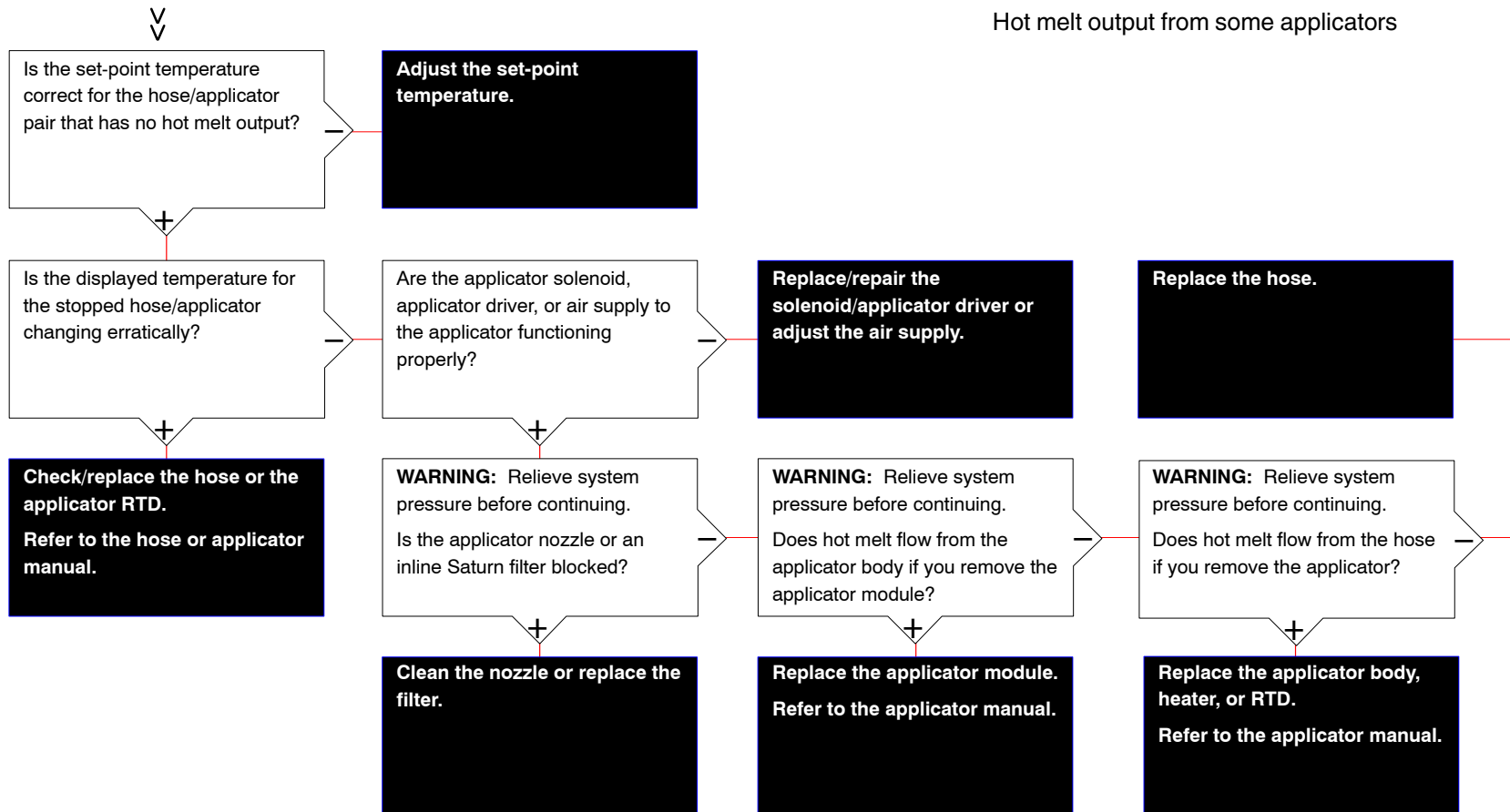
T.5

Starting conditions:

No faults >

Ready LED is illuminated >

Hot melt output from some applicators



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Section 7

Parts

Using the Illustrated Parts Lists

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use these five-column parts lists, and the accompanying illustrations, to describe and locate parts correctly. The following chart provides guidance for reading the parts lists.

The number in the Item column corresponds to the circled item number in the parts list illustration. A dash in this column indicates that the item is an assembly.

The number in the Part column is the Nordson part number you can use to order the part. A series of dashes indicates that the part is not saleable. In this case, you must order either the assembly in which the part is used or a service kit that includes the part.

The Description column describes the part and sometimes includes dimensions or specifications.

The Note column contains letters that refer to notes at the bottom of the parts list. These notes provide important information about the part.

The Quantity column tells you how many of the part is used to manufacture the assembly shown in the parts list illustration. A dash or AR in this column indicates that the amount of the item required in the assembly is not quantifiable.

Item	Part	Description	Quantity	Note
—	0000000	Assembly A	—	
1	000000	• Part of assembly A	2	A
2	-----	• • Part of item 1	1	
3	0000000	• • • Part of item 2	AR	
NS	000000	• • • • Part of item 3	2	
NOTE A: Important information about item 1				
AR: As Required				
NS: Not Shown				

P15 Melter

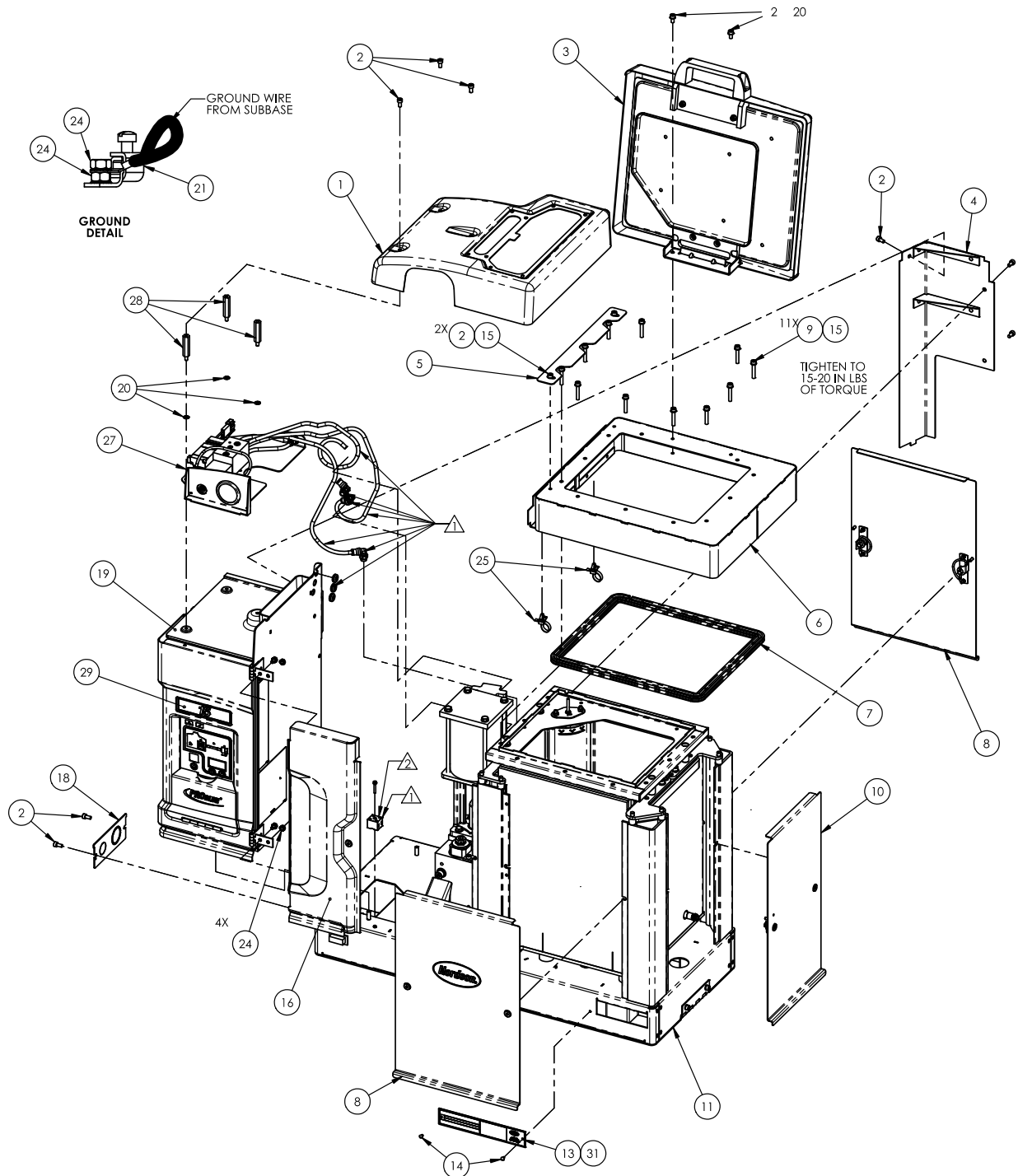
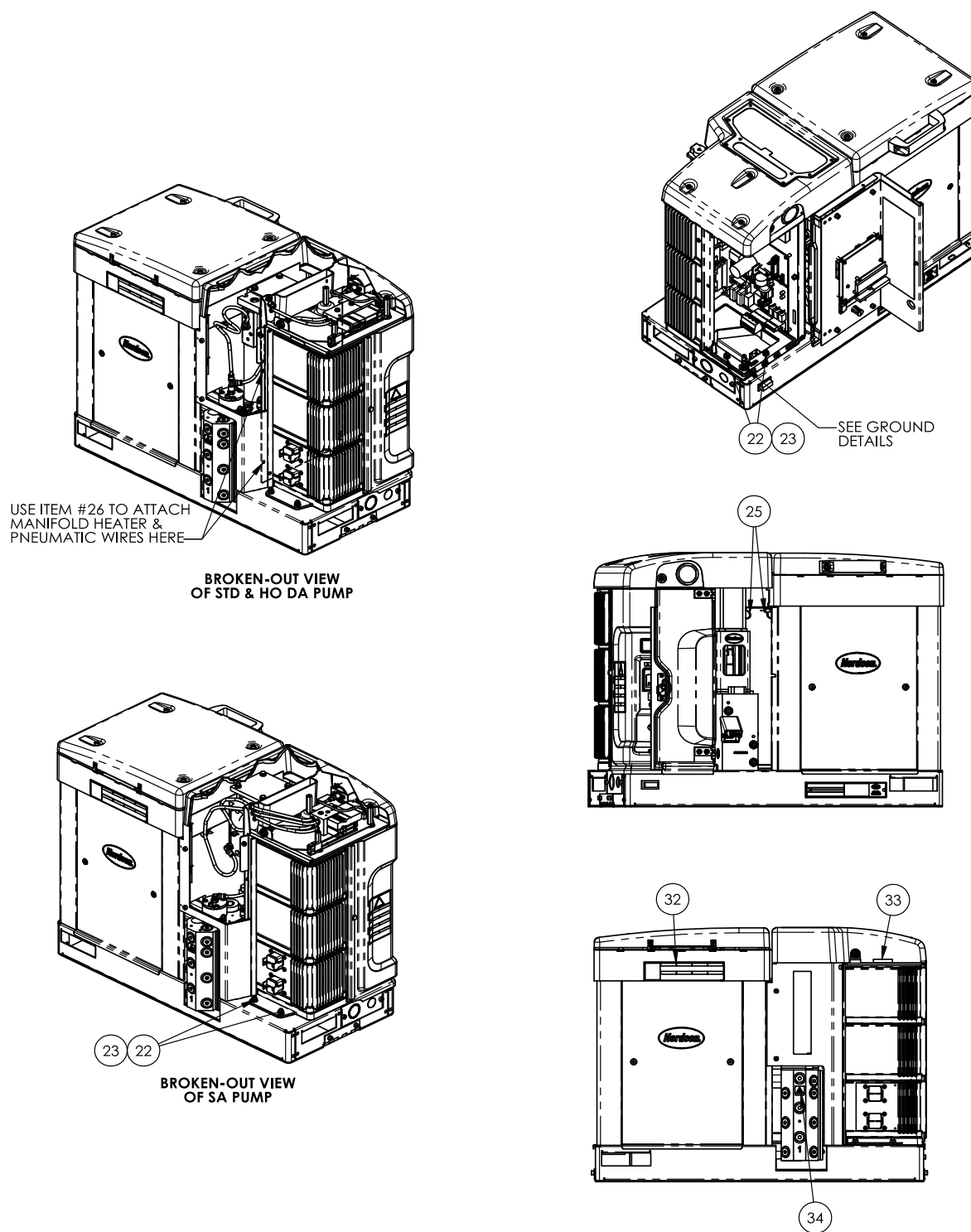


Figure 7-1 P15 Melter (Part I)



NOTES,

- ⚠ PARTS INCLUDED WITH ITEM #27.
- ⚠ USED ON SINGLE ACTING PUMP ONLY.
- 3. ITEM #26 NOT SHOWN.

Figure 7-2 P15 Melter (Part II)

P30 Melter

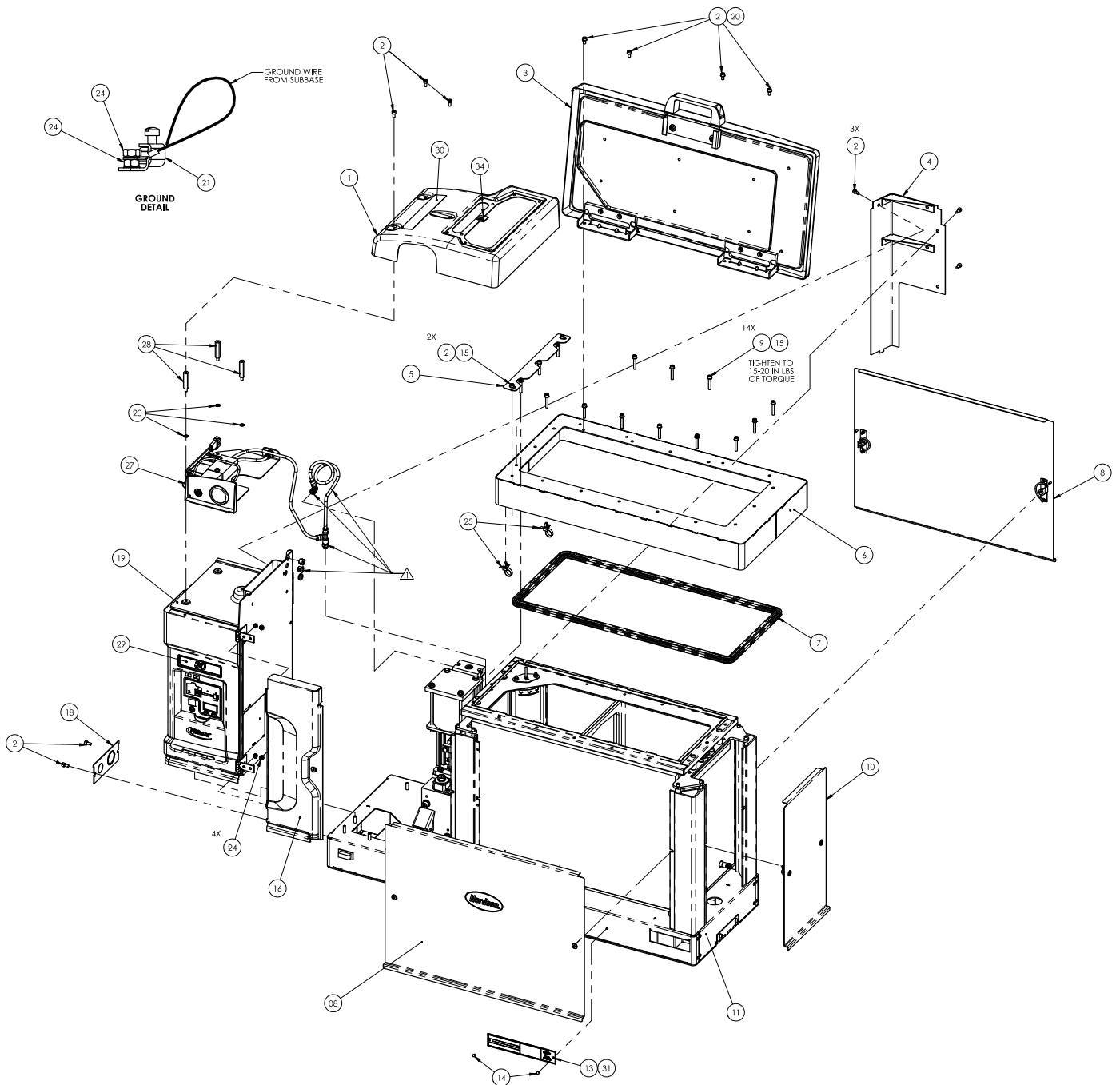


Figure 7-3 P30 Melter (Part I)

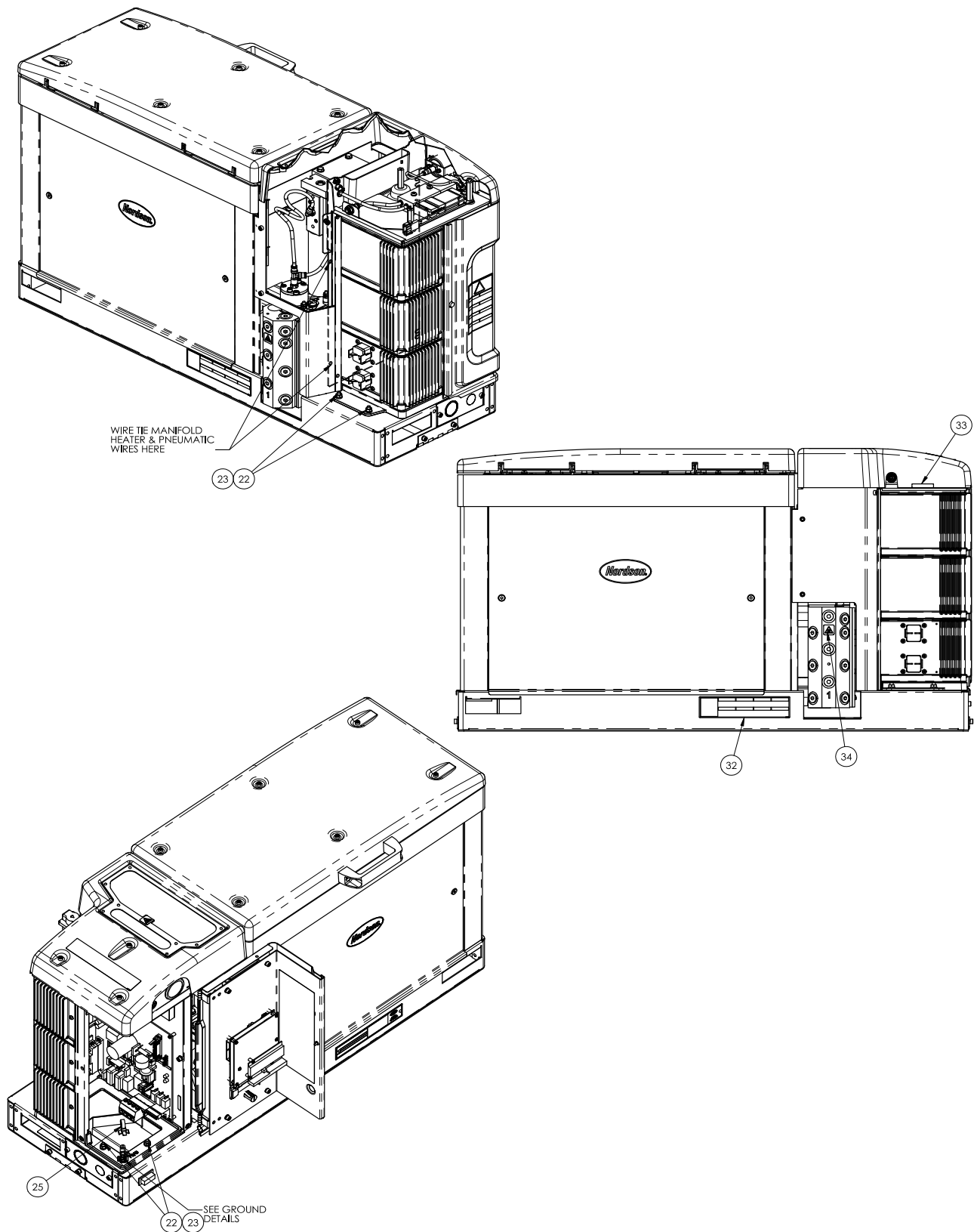


Figure 7-4 P15 Melter (Part II)

P50 Melter

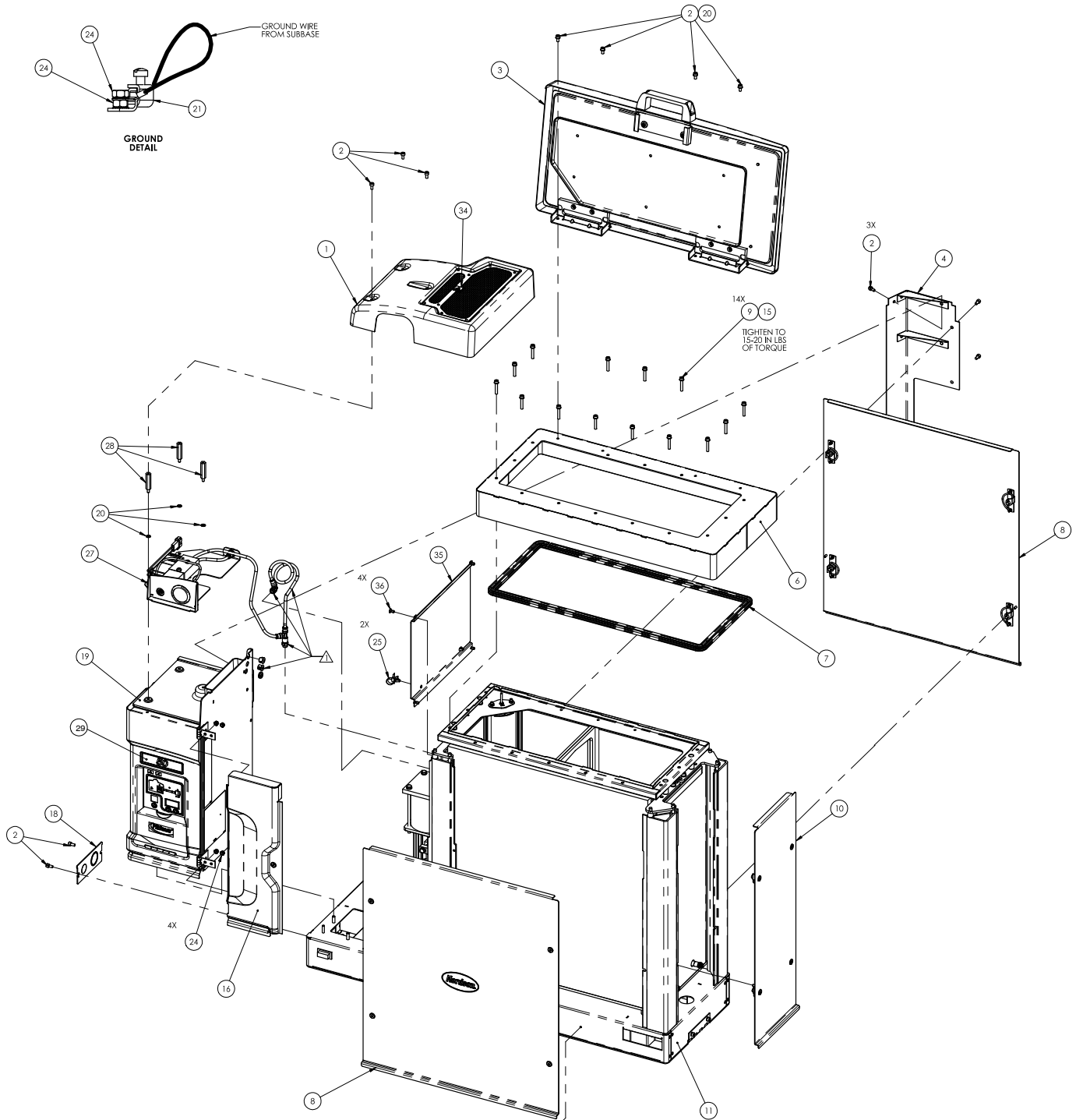


Figure 7-5 P50 Melter (Part I)

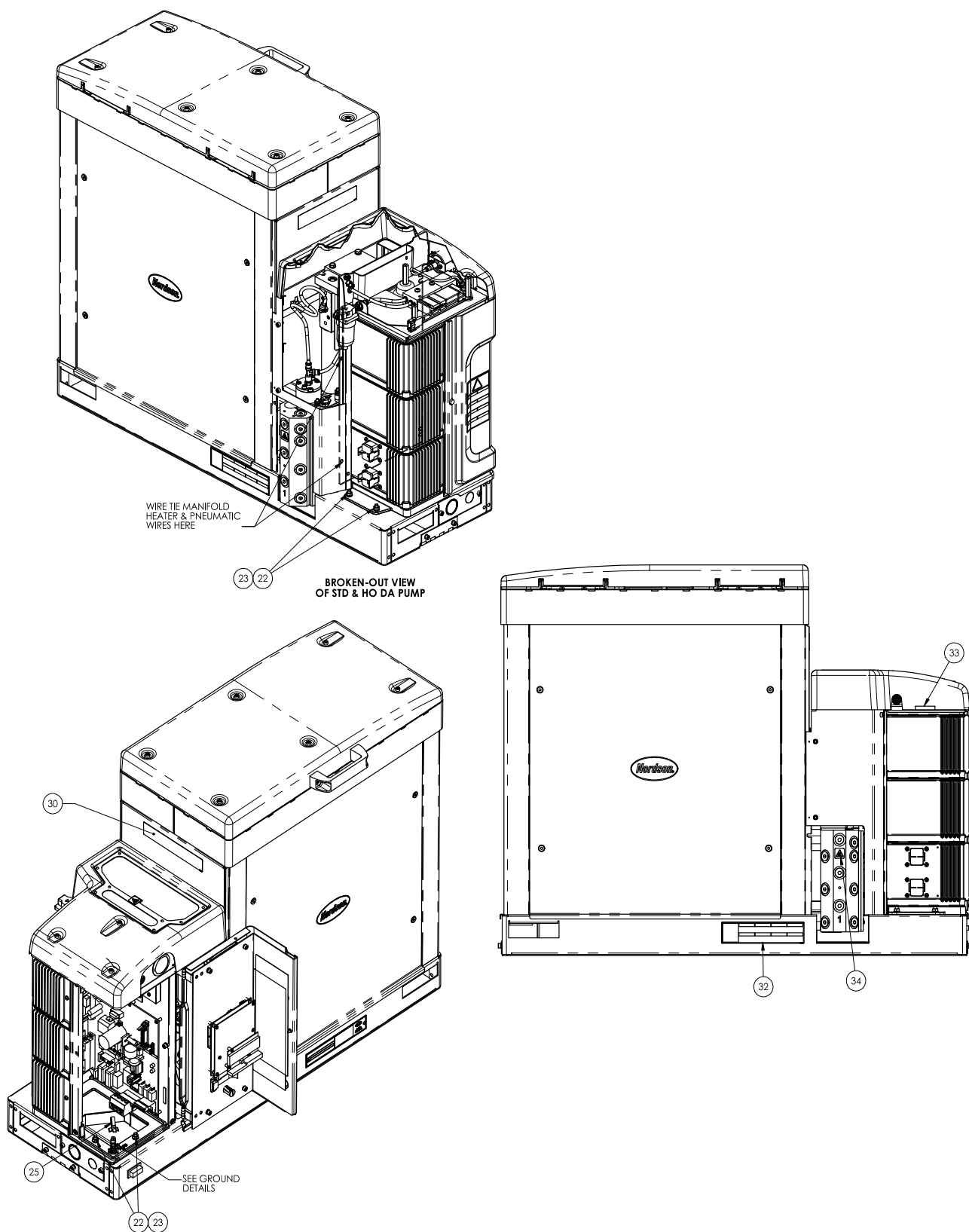


Figure 7-6 P50 Melter (Part II)

Item	Part	Description	Quantity	Note
1	1060350	KIT, SERVICE, ASSY, PUMP COVER,P15,P30,P50	1	A
2	987780	SCR,SKT,M5X10,ZN	12	
3	1060328	KIT, SERVICE, LID REPLACEMENT Y,P15	1	A
	1060361	KIT, SERVICE, LID REPLACEMENT ,P30/P50	1	A
4	1047635	COVER,MANIFOLD,P15,P30,P50	1	
5	1051583	EXTENSION,MELTER COVER, P15/P30	1	
6	1060357	KIT, SERVICE, MELTER COVER,P15	1	A
	1059897	KIT, SERVICE, MELTER COVER,P30	—	A
	1059898	KIT, SERVICE, MELTER COVER,P50	—	A
7	1047623	GASKET,TANK COVER,P15	1	
	1048899	GASKET,TANK COVER,P30/P50	1	
8	1047607	PANEL,LOGO,P15	2	
	1048012	PANEL,LOGO,P30	2	
	1048013	PANEL,LOGO,P50	2	
9	982386	SCR,SKT,M5X35,BL	11	
10	1047608	PANEL,END,P15,P30	1	
	1048014	PANEL,END,P50	1	
11	-----	CHASSIS ASSY,P15,STD	1	
	-----	CHASSIS ASSY,P15,HO	1	
	-----	CHASSIS ASSY,P15,SA	1	
	-----	CHASSIS ASSY,P30,HO/DA	1	
	-----	CHASSIS ASSY,P50,HO/DA	1	
15	983035	WASHER,FLT,M,REG,5,STL,ZN	13	
16	1060351	KIT, SERVICE, DOOR,ASSY,FILTER,P15,P30,P50	1	A
18	1018821	PLATE,CONDUIT,CHASSIS	1	
19	-----	ENCL ASSY,ELEC,P15,30,50,2 H/G	1	
	-----	ENCL ASSY,ELEC,P15,30,50,4 H/G	1	
	-----	ENCL ASSY,ELEC,P15,30,50,6 H/G	1	
20	983127	WASHER,LK,INT,M5,ZN	5	
21	-----	TERMLUG,GROUND,6-14AWG	1	
22	-----	WASHER,LK,M,SPT,M6,STL,ZN	4	
23	983409	NUT,HEX,M6,STL,ZN	4	
24	983703	NUT,HEX,W/EXT TOOTH WASHER,M5,STL,ZN	6	
25	-----	TIE,NYLON,PUSH MOUNT	2	
26	-----	CABLETIE,4IN,302	2	
27	1058380	KIT, SERVICE, PNEUMATIC ASSY,STD DOUBLE ACTING PUMP	1	A
	1058383	KIT, SERVICE, PNEUMATIC ASSY,H.O. DOUBLE ACTING PUMP	1	A
	1058385	KIT, SERVICE, PNEUMATIC ASSY,SINGLE ACTING PUMP	1	A
28	1050073	SPACER,HEX THREADED,STEEL,M5X40mm	3	
29	1056612	TAG,TANK SIZE,15,PROBLUE2	1	
	1056613	TAG,TANK SIZE,30,PROBLUE2	1	
	1056614	TAG,TANK SIZE,50,PROBLUE2	1	
30	1025326	TAG, CAUTION, HOT SURFACE	1	
35	1048180	PANEL, CENTER, P50	1	
36	-----	RIVET, POP, LG FLNG (P50)	1	
NOTE A: Refer to <i>Service Kits</i> for kit contents				

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P15 Chassis Assembly

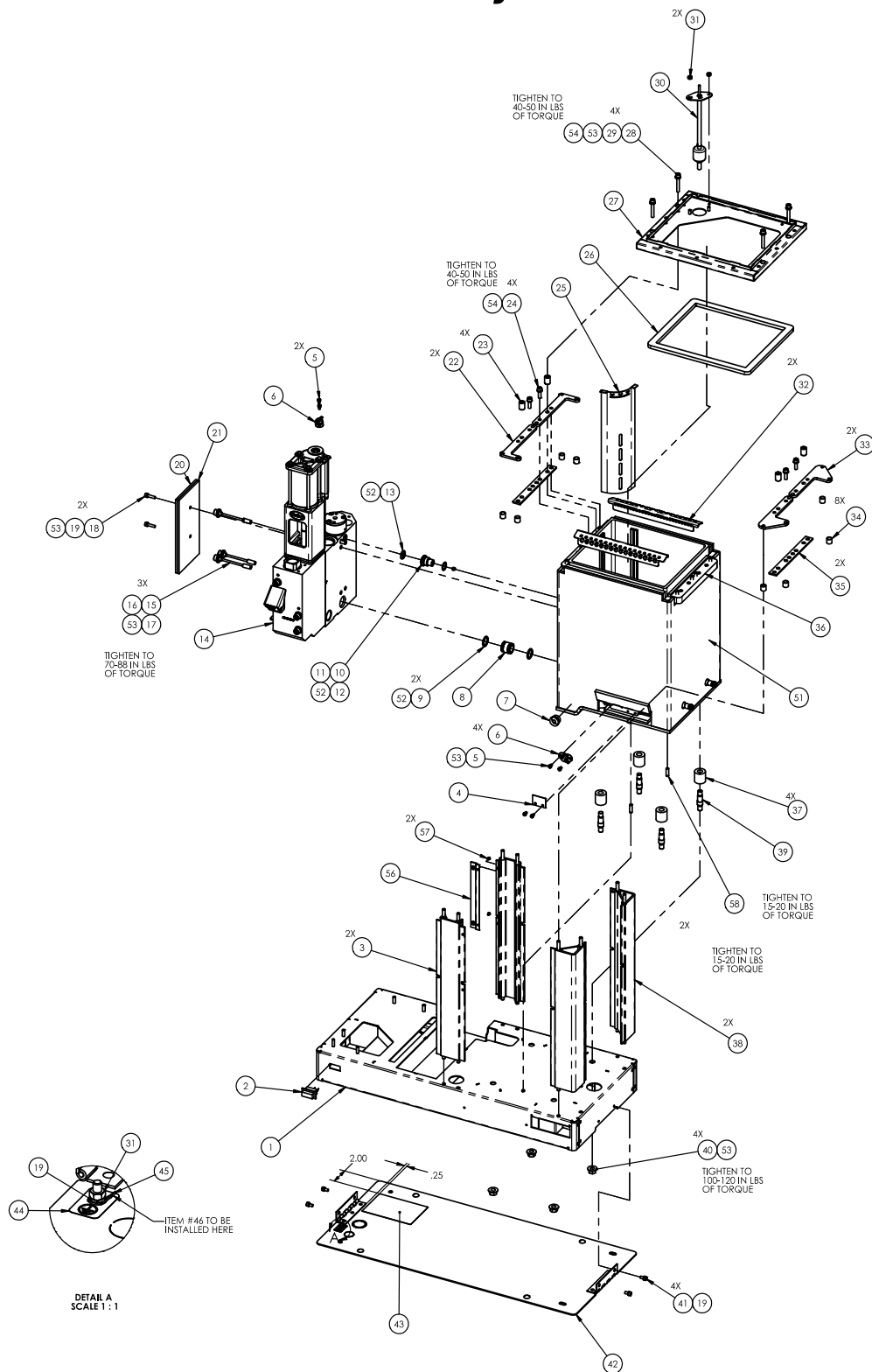


Figure 7-7 P15 Chassis Assembly

P30 Chassis Assembly

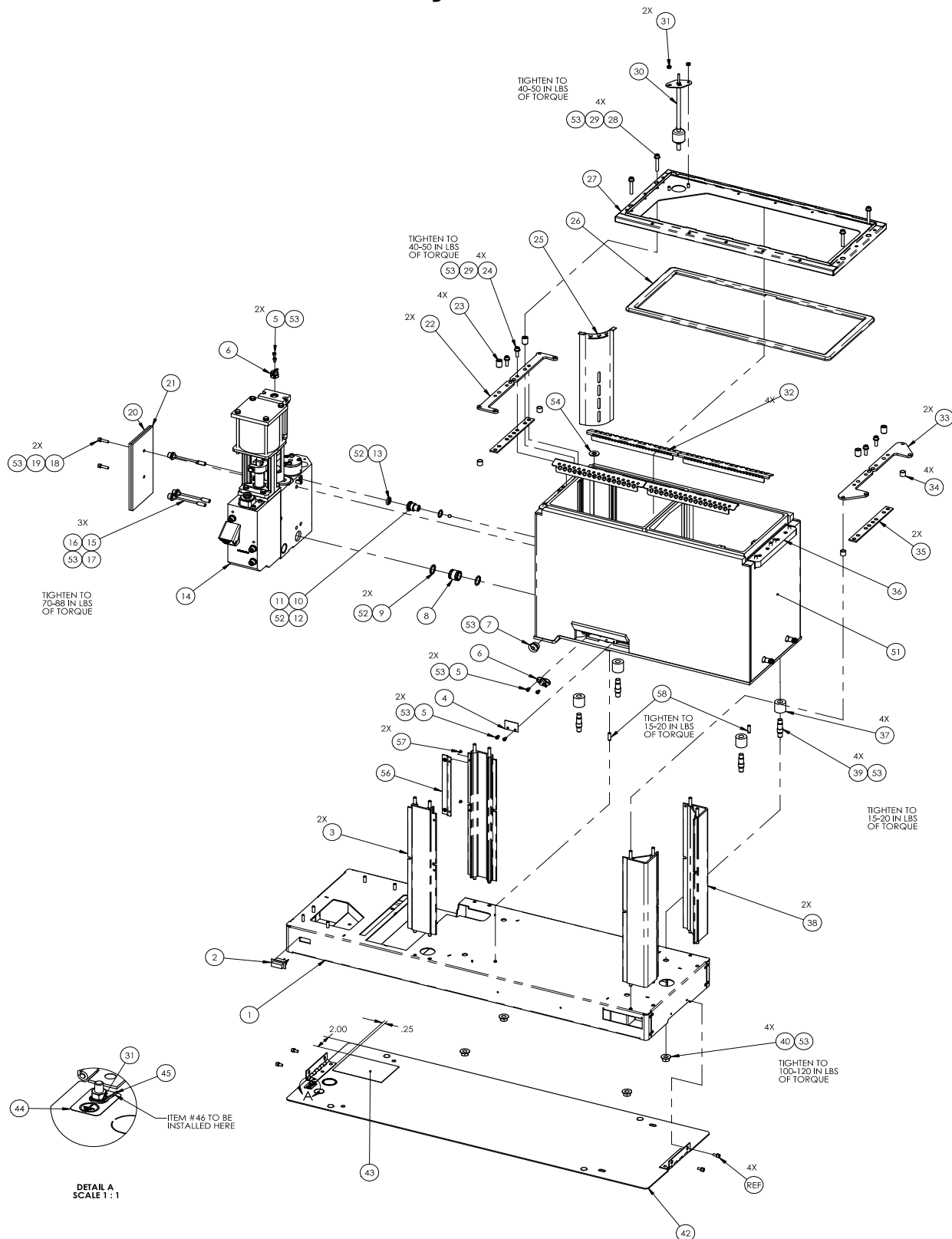


Figure 7-8 P30 Chassis Assembly

P50 Chassis Assembly

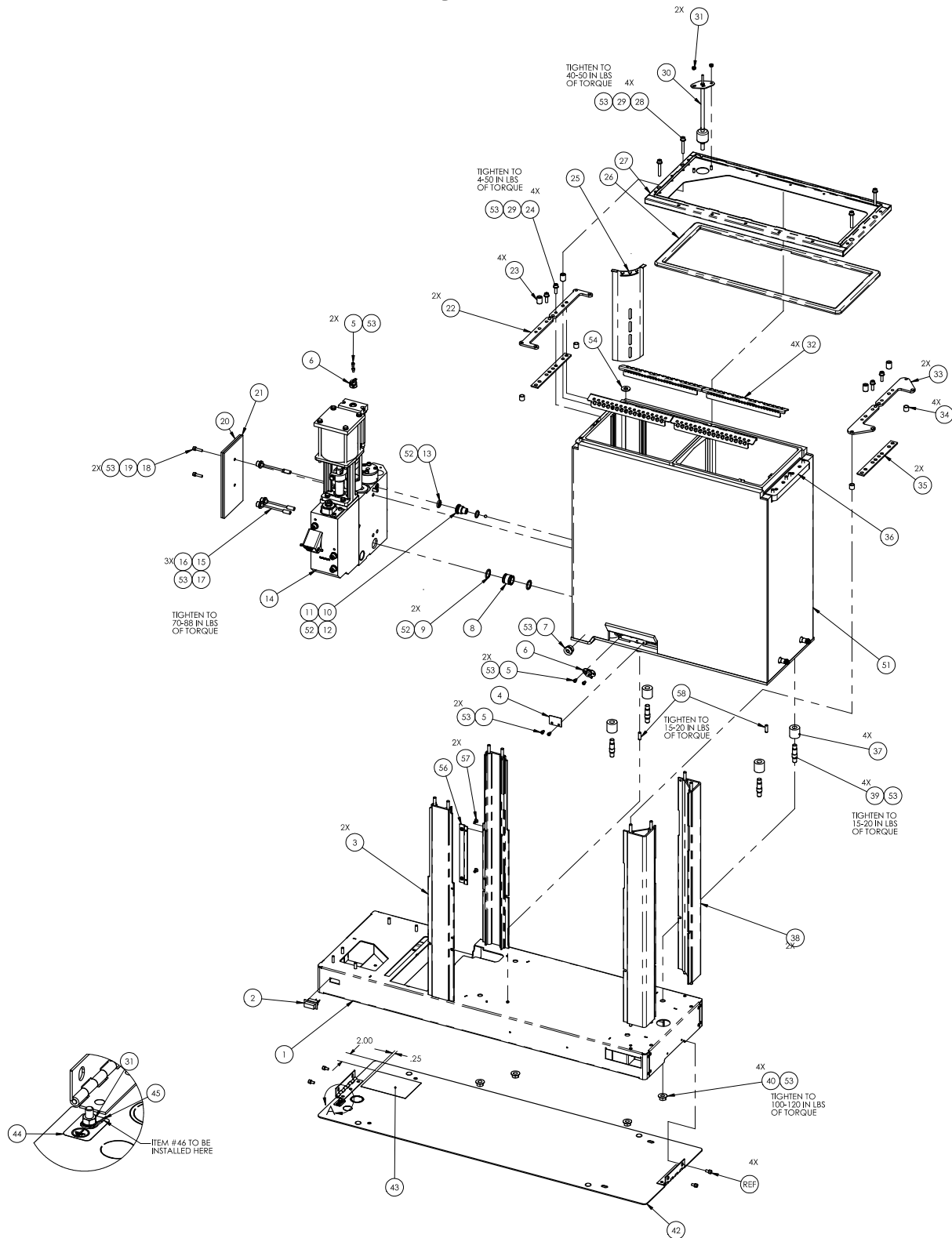


Figure 7-9 P50 Chassis Assembly

Item	Part	Description	Quantity	Note
1	1047456	CHASSIS,P15	1	
	1047457	CHASSIS,P30/P50	1	
2	1017947	SWITCH,ROCKER,SPST,250V,16A,GOL	1	
3	1047630	POST,CENTER,P15/P30	2	
	1048184	POST,CENTER, P50	2	
4	1018189	CLIP,RETAINING,RT	1	
5	345534	SCR,SHCS,M4X6,BL	6	
6	1028321	KIT, SERVICE THERMOSTAT	2	A
7	973221	PLUG,O RING,STR THD,3/4-16,STL	1	
8	1017186	TUBE,CROSSOVER,TANK	1	
9	941161	O RING,VITON, .750X .938X.094	2	
10	1049380	SEAT,VALVE, CHECK,WEED,TANK,P15/30/50	1	
11	900037	BALL,440SSTL, .250,100	1	
12	940161	O RING,VITON,.614ID X .070W,BR, 10416	1	
13	1019515	ORING, VITON, .50 X .75 X .125	1	
14	-----	PUMP/MANIFOLD ASSY,PROBLUE,HO,DA	1	
	-----	PUMP/MANIFOLD ASSY,PROBLUE,SINGLE ACTING	1	
	-----	PUMP/MANIFOLD ASSY,6 HOSE	1	
15	1017009	SCREW,MANIFOLD MOUNTING,M8	3	
16	-----	WASHER,LK,M,SPT,M8,STL,ZN	3	
17	983313	WASHER,FLT,M,REG,8,STL,ZN	3	
18	815945	SCR,SKT,M5X20,ZN	2	
19	983401	WASHER,LK,M,SPT,M5,STL,ZN	7	
20	1017726	PLATE,COVER,INSULATION,HEATER	1	
21	1017725	INSULATION,MANIFOLD	1	
22	1047625	BRACKET,CENTER POST,P15/30/50	2	
23	1047632	STAND-OFF,TANK COVER,P15/30/50	4	
24	982030	SCR,SKT,M6X20,BL	4	
25	1051584	SCREEN,LEVEL SWITCH,PB II	1	
26	1047634	SEAL,TANK,P15	1	
	1047622	SEAL,TANK,P30/P50	1	
27	1047621	COVER,TANK,P15	1	
	1048186	COVER,TANK,P30/P50	1	
28	981499	SCR,SKT,M6X40,ZN	4	
29	983029	WASHER,FLT,M,REG,M6,STL,ZN	4	
30	1060329	KIT, SERVICE, SWITCH,LEVEL,ASSY,P15/30	1	A
	1060362	KIT, SERVICE, SWITCH,LEVEL,ASSY,P50	1	A
31	1052143	NUT,HEX,W/EXT TOOTH WASHER,M5,STL,ZN	3	
32	1047631	STRAINER,TANK,P15/30/50	2 or 4	
33	1047624	BRACKET,CORNER POST,P15/30/50	2	
34	1047633	SPRING,COMPRESSION,POST,P15/30/50	4	
35	1047626	INSULATOR,BRACKET,POST,P15/30/50	2	
36	1060356	KIT, SERVICE, REPLACEMENT TANK, P15	1	A
	1061520	KIT, SERVICE, REPLACEMENT TANK, P309	1	A
	1061613	KIT, SERVICE, REPLACEMENT TANK, P50	1	A
37	-----	INSULATOR,TANK FOOT,STEPPED/P15/30/50	4	
38	1047629	POST,CORNER,P15/30	2	
	1048183	POST,CORNER,P50	2	

Continued...

7-14 Parts

Item	Part	Description	Quantity	Note
39	-----	STUD,TANK,M10,P15/30/50	4	
40	-----	NUT,HEX,FLANGED,SERRATED,M10	4	
41	-----	SCR,SKT,M5X10,ZN	4	B
42	1047458	SUB BASE,P15	1	
45	1023299	LUG,45,SINGLE,M5 X .032	1	
46	1024619	WIRE ASSY,GRND,10GA,SPD/RING,6INCH LG	1	
47	273730	INSULATOR,THERMOSTAT,EL	4	
48	-----	CABLETIE,4IN,302	2	
49	1047165	HARNESS,HEATER,P15/P30/P50	1	
50	1050945	HARNESS,SIGNAL,P15/P30/P50	1	
51	1052220	INSULATION,TANK,P15	1	
	1052579	INSULATION,TANK,P30	1	
	1052580	INSULATION,TANK,P50	1	
52	900493	LUBRICANT,PARKER HI-TEMP,11208	0	
53	900344	LUBRICANT,NEVER SEEZ,8OZ CAN	0	
54	345938	WASHER,LK,M,SPT,M6,STL,ZN	4	
	-----	WASHER,FLT, E, .375X.875X.083, STL,ZN (P30/P50)	4	
55	1028320	SERVICE KIT, RTD	2	A
56	1056275	BRACKET,MTNG,MANIFOLD COVER,P15,P30,P50	1	
57	-----	RIVET,POP, LG FLNG,1/8X.187,SS STL	2	
58	-----	SCREW,SET,PARTIAL THD,M6X20	2	

NOTE A: Refer to *Service Kits* for kit contents
 B: Screws provided in the installation kit

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Electrical Enclosure Assembly

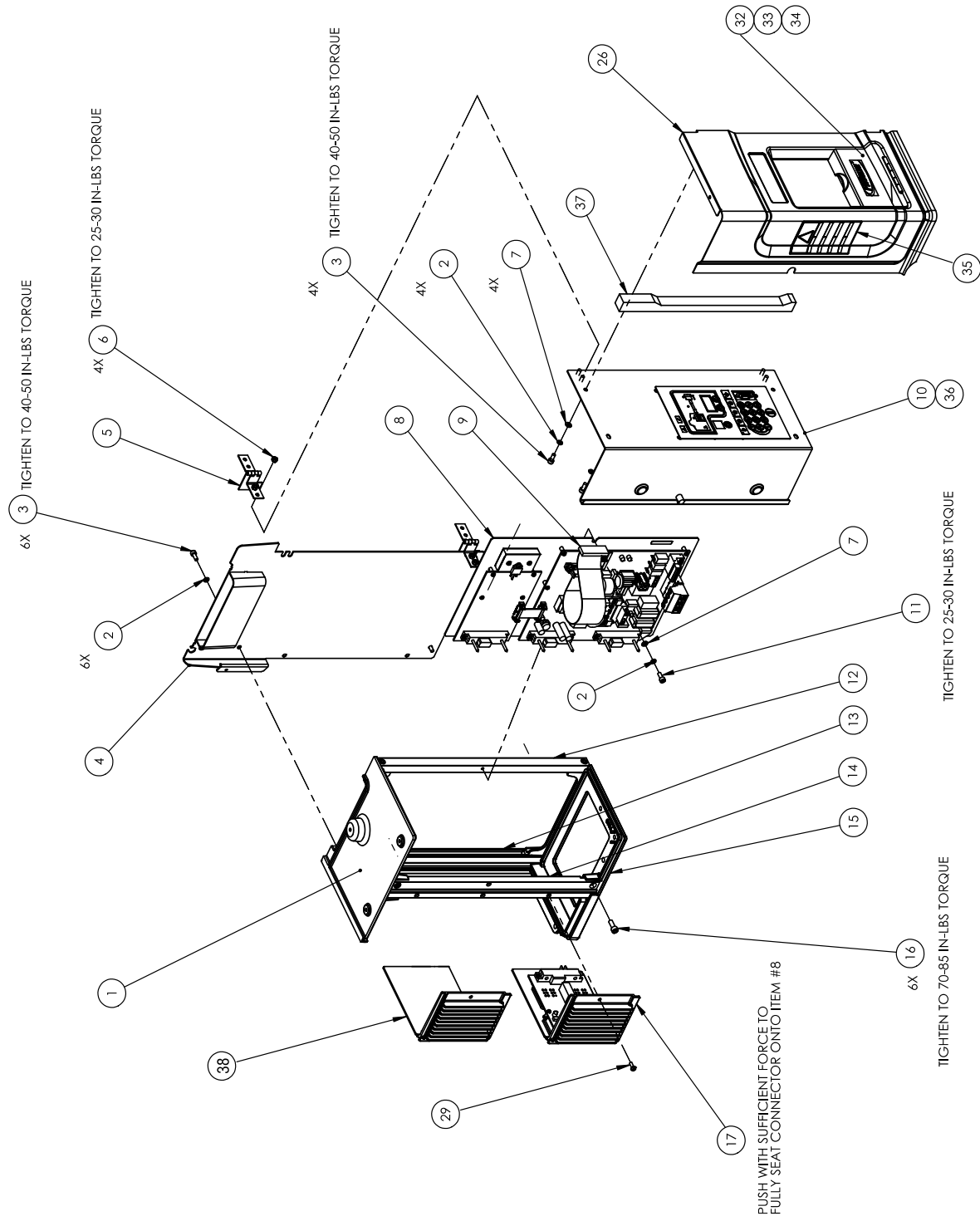


Figure 7-10 Electrical Enclosure Assembly

Item	Part	Description	Quantity	Note
1	1039649	FRAME,MACHINED,UPPER,KEY	1	
2	-----	WASHER,LK,M,SPT,M5,STL,ZN	15	
3	-----	SCR,SKT,M5X12,BL	10	
4	1049898	PANEL,DIVIDER,EBOX,P15,P30,P50	1	
5	1050021	HINGE,ASSEMBLY,P15,P30,P50	2	
6	984721	NUT,HEX,M5,STL,ZN,NYLOK	4	
7	983035	WASHER,FLT,M,REG,5,STL,ZN	5	
8	1054008	KIT, REPLACEMENT, MOUNTING PLATE,MAIN PCA,PB II	1	A
9	1018283	CABLE ASSY,RIBBON,MAIN,34 POS	1	
10	1028327	KIT, REPLACEMENT, PANEL, FRONT,10KG	1	A
11	-----	SCR,PAN,CROSS-REC,M5X8	1	
12	1042413	COLUMN,KEYED,FRONT,EBOX,P10	1	
13	1042414	COLUMN,KEYED,REAR,EBOX,P10	1	
14	1042415	COLUMN,KEYED,CENTER,EBOX,P10	1	
15	1039647	FRAME,MACHINED,LOWER,KEY	1	
16	711253	SCR,SKT,M6X16,ZN	6	
17	1028328	KIT, REPLACEMENT, MODULE , PWR,REMOVABLE	1, 2 or 3	A
22	1052524	THRDSPCRMM,MALE/FEM,SS,HEX,M3,8MMLG	7	NS
23	983520	WASHER,LK,M,INT,M3,STL,ZN	7	NS
24	1028325	KIT, SERVICE, PCA,DISPLAY/CPU,BLUE SERIES	1	A, NS
25	1023715	THRDSPCRMM,NYLON,F/F, M3 X 6MM HEX x10M	1	NS
26	1060352	KIT, COVER,DOOR,EBOX,P15	1	A
	1059899	KIT, COVER,DOOR,EBOX,P30	1	A
	1059910	KIT, COVER,DOOR,EBOX,P50	1	A
28	-----	WASHER,FLT,M,REG,M3,ZINC PLATE	1	NS
29	982769	MACHSCRM,PAN,REC,M4X12,SEMS	1	
30	1021990	TAG, FILTER CHANGE	1	NS
31	1024720	TAG, WARNING, HOT ADH	1	NS
32	1049901	DOOR,FLIP-DOWN,GRAPHICS,PROBLUE	1	
33	982881	SCR,PAN,REC,M4X6,ZN	2	
34	1021991	TAG, FAULT CODES	1	
35	102984	TAG, TAG WARNING, HAZ VOLTS	1	
36	1021989	TAG, REPLACEMENT PARTS	1	
37	1057499	GASKET,DOOR,EBOX,PBII	1	
38	1017223	FRAME, BLANK MODULE, MACHINE	-	

NOTE A: Refer to *Service Kits* for kit contents.

NS: Not Shown

Pump/Manifold Assembly

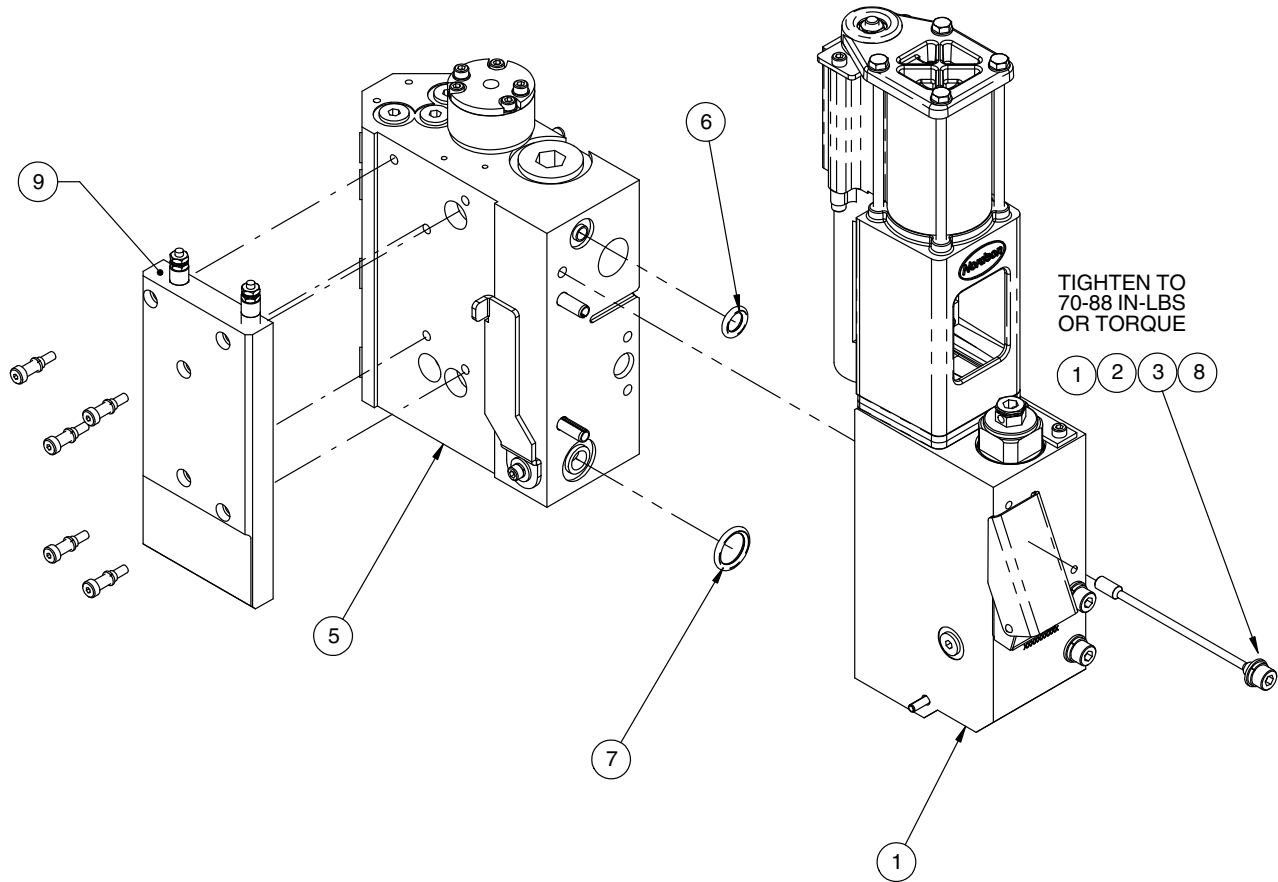


Figure 7-11 Pump/manifold assembly

Item	Part	Description	Quantity	Note
1	1017060	SCREW,PUMP MOUNTING,M8	3	
2	-----	WASHER,FLT,M,REG,8,STL,ZN	3	
3	-----	WASHER,LK,M,SPT,M8,STL,ZN	3	
4	1028303	SERVICE KIT, PUMP ASSY, STD	1	A
	1058306	SERVICE KIT, PUMP ASSY,SINGLE ACTING	1	A
	1058305	SERVICE KIT, PUMP ASSY,DOUBLE ACTING,HIGH OUTPUT	1	A
5	1064651	SVC KIT,MANIFOLD 4-H, W/HTR BLOCK, 230V, PB	1	A
	1064653	SVC KIT,MANIFOLD 6-H, W/HTR BLOCK, 230V, PB	1	A
	1064652	SVC KIT,MANIFOLD 4-H, W/HTR BLOCK, 480V, PB	1	A
	1064654	SVC KIT,MANIFOLD 6-H, W/HTR BLOCK, 480V, PB	1	A
6	1019515	ORING, VITON, .50 X .75 X .125	1	
7	942111	O RING,VITON, .812X1.062X.125	1	
8	900344	LUBRICANT,NEVER SEEZ,8OZ CAN	0	
9	1064649	SVC KIT,HEATER BLOCK,230V,PROBLUE	1	A
NOTE A: Refer to <i>Service Kits</i> for kit contents				

Double-Acting, High-Output Pump Assembly

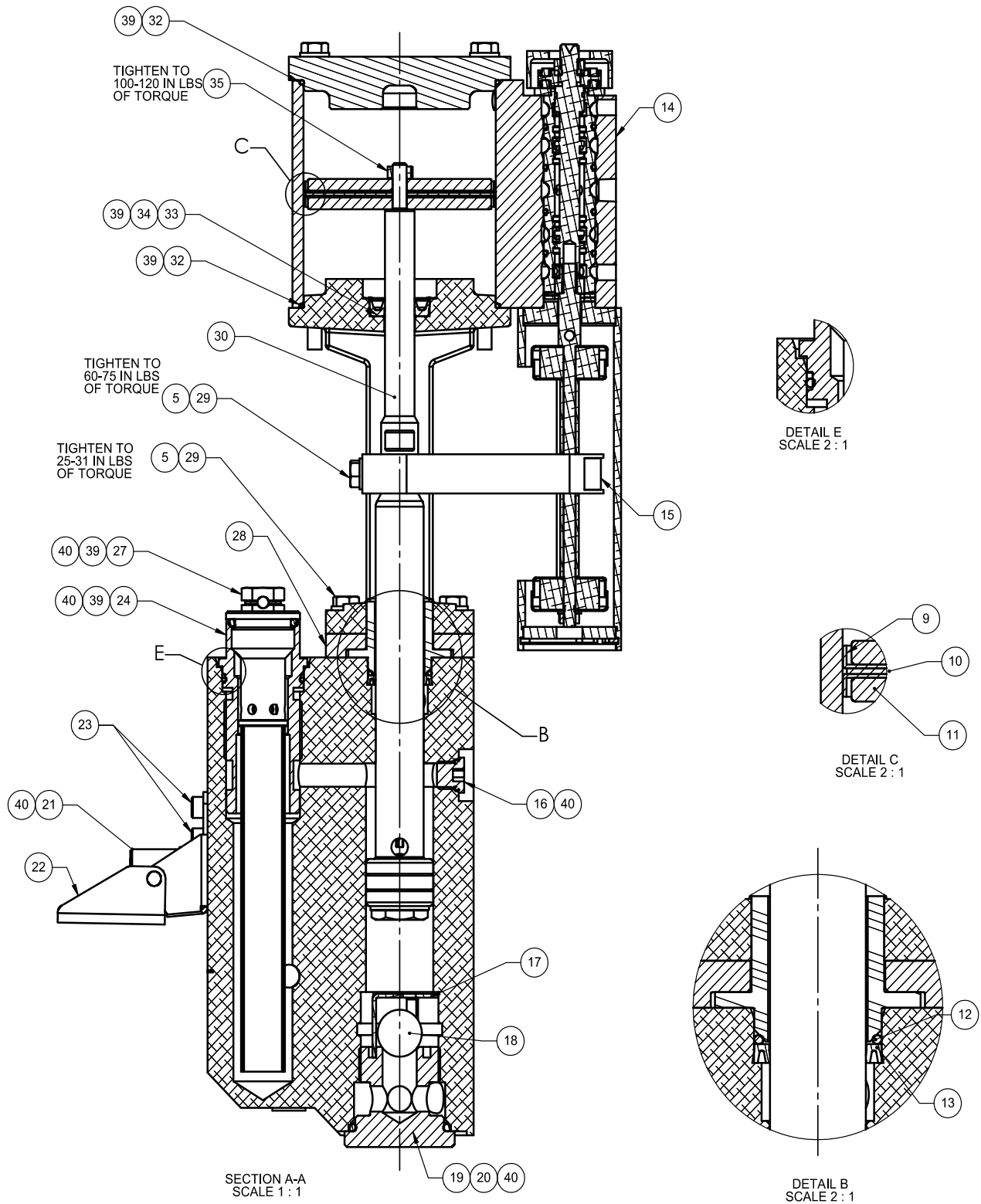
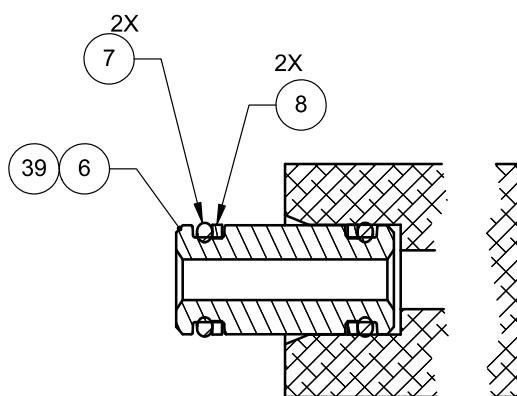
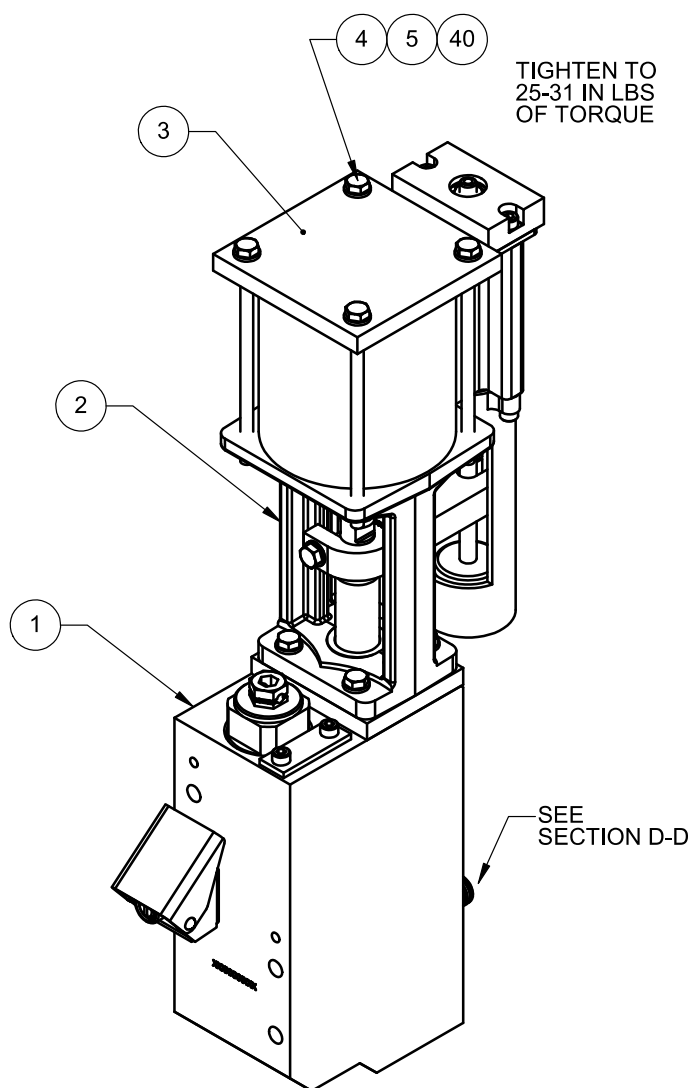


Figure 7-12 High-output Double-Acting pump (Part 1)



SECTION D-D
SCALE 2 : 1

Figure 7-13 High-output Double-Acting pump (Part 2)

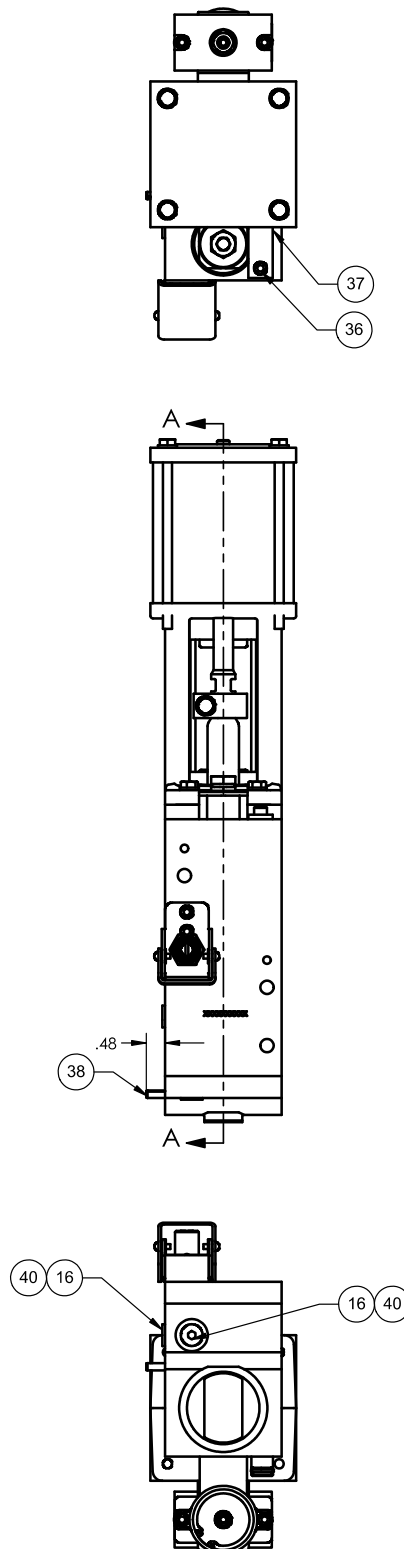


Figure 7-14 High-output Double-Acting pump (Part 3)

Item	Part	Description	Quantity	Note
1	1044783	BODY,PUMP-FILTER,HIGH OUTPUT	1	
2	1044785	PUMP FRAME,HIGH OUTPUT MACHINE	1	
3	1044053	HEAD,CYLINDER PUMP,HIGH OUTPUT	1	
4	982147	SCR,HEX,CAP,M6X120,ZN	4	
5	983410	WASHER,FLT,M,NARROW,M6,STL,ZN	9	
6	1017189	TUBE,CROSSOVER,PUMP	1	
7	940133	O RING,VITON,.426ID X .070W,BR,10413	2	
8	954013	BACK-UP RING,SINGLE,7/16X9/16	2	
9	1044068	CUP,PISTON,PUMP,HIGH OUTPUT	2	
10	1044070	WASHER,SEAL,PISTON,PUMP,HIGH OUTPUT	1	
11	1044069	WASHER,CUP,PISTON,PUMP,HIGH OUTPUT	2	
12	940211	O RING,VITON, .938X1.063X.063	1	
13	288122	SEAL,PUMP,HI VOL,MPL	1	
14	-----	SHIFTER ASSY,G1/8,HIGH OUTPUT	1	B
15	1060354	KIT, SERVICE, FORK, MAGNETIC,PUMP,H.O.	1	A
16	973543	PLUG,O RING,STR THD,7/16-20	3	
17	1044790	CAGE,BALL,SIPHON,HIGH OUTPUT	1	
18	900023	BALL,440SSTL, .750, 50	1	
19	1044789	SEAT,BALL,SIPHON,HIGH OUTPUT	1	
20	303706	ORING,-920,VITON,1.475ID,.118W	1	
21	276024	VALVE ASSY,DRAIN	1	
22	1022779	CHUTE,DRAIN,ASSY	1	
23	982780	SCR,SKT,M5X10,ZN	2	
24	1021955	ADAPTER,FILTER,ASSY	1	D
27	-----	FILTER,ASSEMBLY,100 MESH, W/ O-RING	1	A
28	1045950	INSULATOR,PUMP FRAME,HIGH OUTPUT	1	
29	982237	SCR,HEX,CAP,M6X35,ZN	5	
30	1045953	PISTON ASSEMBLY,HYDRAULIC,HIGH OUTPUT	1	C
32	940420	O RING,VITON, 3.250X3.375X.063	2	
33	1044194	UCUP,.500 ID,1 OD, .250,VITON	1	
34	1047615	RETAINING RING,INT,125,PUSHON	1	
35	984092	NUT,HEX,LOCK,TORQUE,M6,CLASS10	1	
36	982372	SCR,SKT,M5X12,BL	2	
37	1021270	PLATE,FILTER,ANTI ROTATE	1	
38	-----	PIN,ROLL,.188X1,STL,ZN	2	
39	900493	LUBRICANT,PARKER HI-TEMP,11208	0	
40	900344	LUBRICANT,NEVER SEEZ,8OZ CAN	0	

NOTE A: Refer to *Service Kits* for kit contents.

B: See Figure 7-15 for exploded view

C: See Figure 7-16 for exploded view

D: O-ring and backup ring provided in pump service kit P/N 1058307

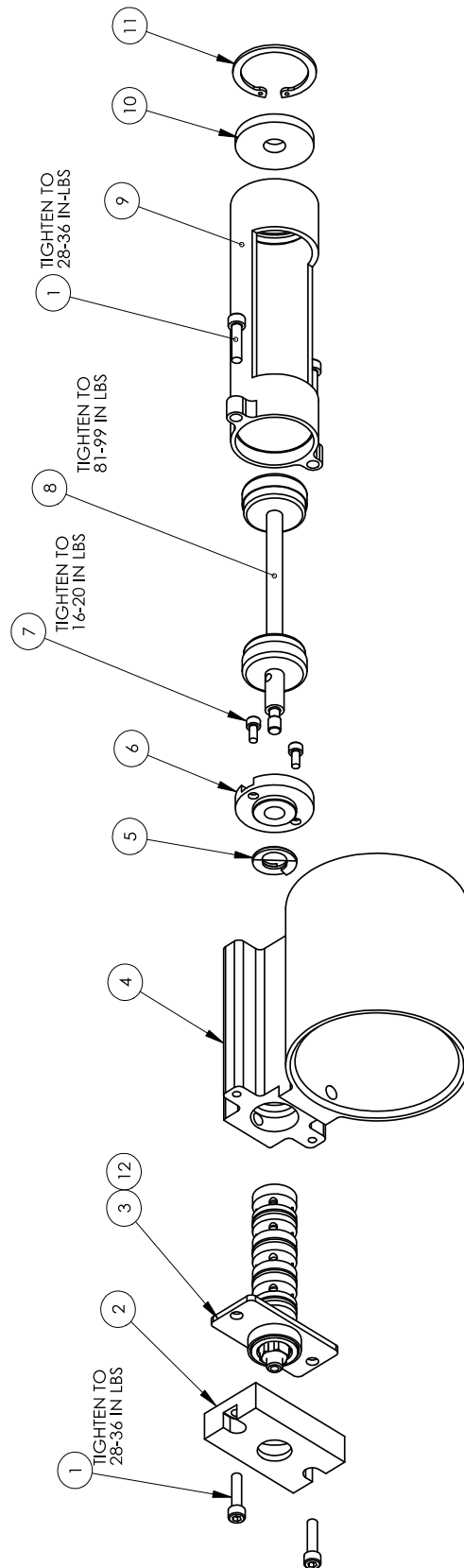


Figure 7-15 Shifter assembly/High-output Double-Acting pump

Item	Part	Description	Quantity	Note
1	982028	SCR,SKT,M5X20,BL	4	
2	155054	CAP,VALVE,SP	1	
3	1006027	SERVICE KIT, VALVE ASSY SP	1	A
4	1044054	CYLINDER,AIR,PUMP,HIGH OUTPUT	1	
5	333560	SPRING,WAVE,INCONEL,SP PUMP	1	
6	155057	DETENT,UPPER,SP	1	
7	982059	SCR,SKT,M4X8,BL	2	
8	164606	SERVICE KIT, ACTUATOR,MAGNETIC,ASSY,SP	1	A
9	155068	CAN,SP	1	
10	155067	DETENT,LOWER ,SP	1	
11	986714	RETAINING RING,INT,156,BOWED	1	
12	900493	LUBRICANT, PARKER HI-TEMP	1	
NOTE A: Refer to <i>Service Kits</i> for kit contents.				

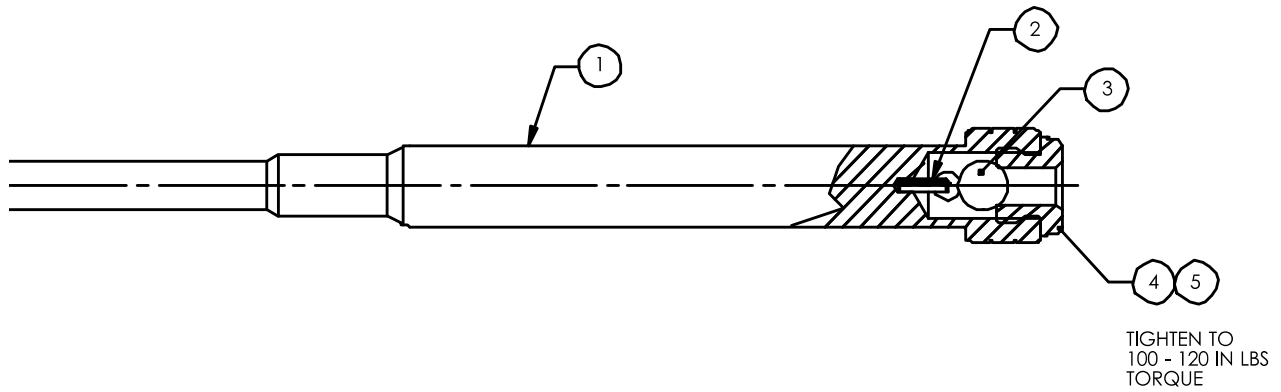


Figure 7-16 Piston assembly/High-output Double-Acting pump

Item	Part	Description	Quantity	Note
1	-----	PISTON,PUMP,HIGH OUTPUT	1	
2	985302	PIN,ROLL,.125X .500,STL,ZN	1	
3	900001	BALL,440SSTL,.500, 50	1	
4	1050826	SEAT,PRESSURE BALL,.500 DIA	1	
5	-----	ADHESIVE,LOCTITE 272,RED,HI TEMP,50ML	—	

Standard Double-Acting Pump Assembly

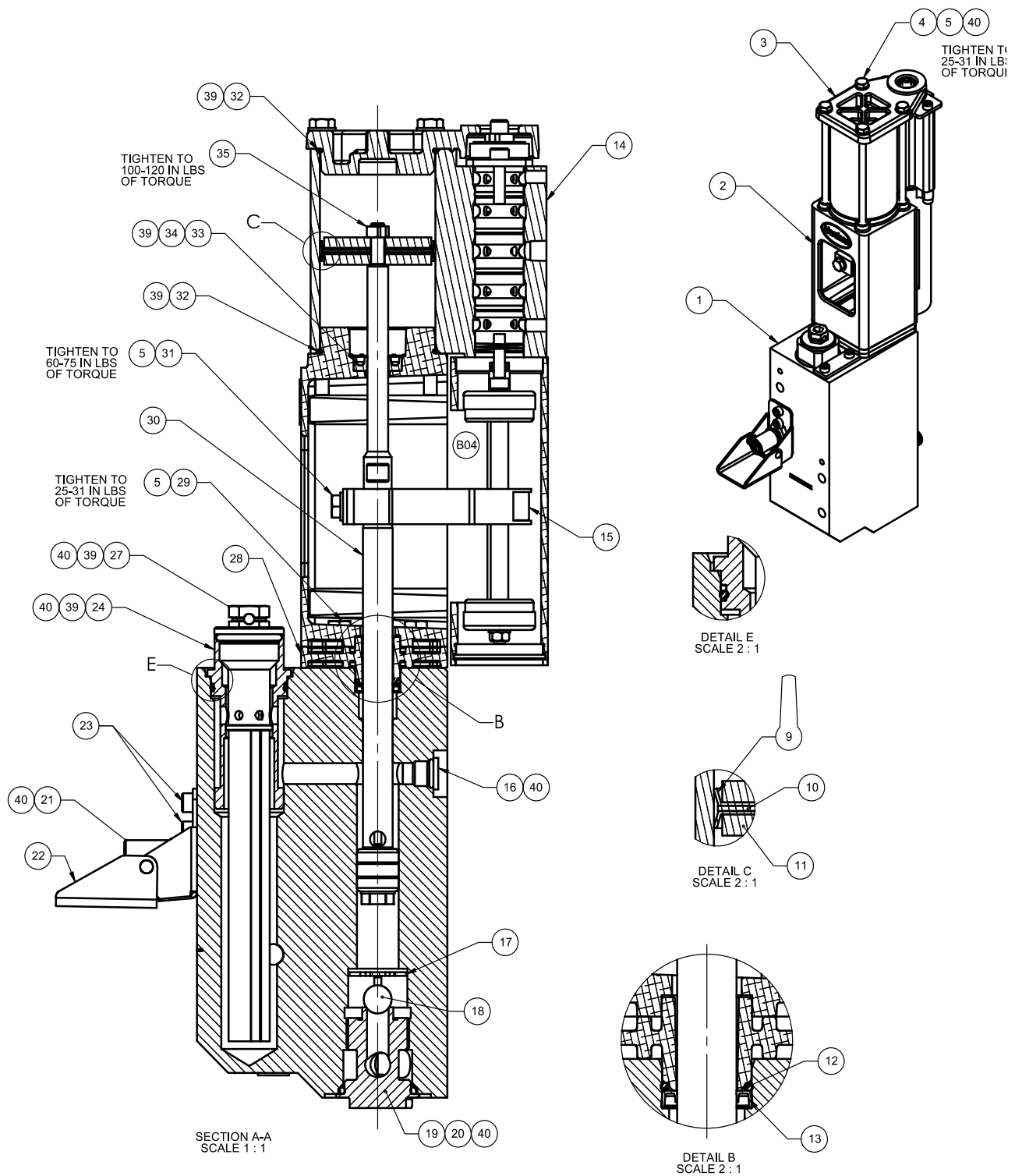


Figure 7-17 Standard Double-Acting pump (Part 1)

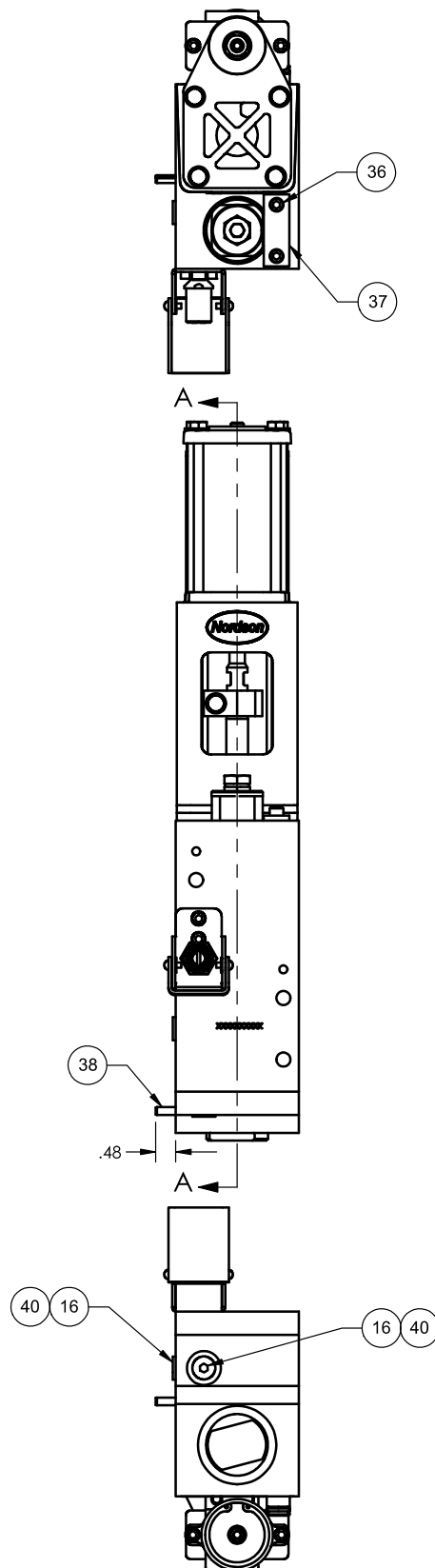


Figure 7-18 Standard Double-Acting pump (Part 2)

Item	Part	Description	Quantity	Note
1	1016863	BODY,PUMP-FILTER	1	
2	1016339	FRAME,PUMP,MACHINE	1	
3	333137	HEAD,CYLINDER,SP,MACHIN	1	
4	982147	SCR,HEX,CAP,M6X120,ZN	4	
5	983410	WASHER,FLT,M,NARROW,M6,STL,ZN	9	
6	1017189	TUBE,CROSSOVER,PUMP	1	
7	940133	O RING,VITON,.426ID X .070W,BR,10413	2	
8	954013	BACK-UP RING,SINGLE,7/16X9/16	2	
9	163039	CUP,PISTON,SP	2	
0	983445	WASHER,PISTON SEAL,SP	1	
11	983446	WASHER,PISTON CUP,SP	2	
12	940172	O RING,VITON,.676ID X .070W,BR	1	
13	273139	SEAL,PUMP.	1	
14	1024465	SHIFTER ASSEMBLY,G1/8	1	B
15	166880	SERVICE KIT, FORK,MAGNETIC,ASSY	1	A
16	973543	PLUG,O RING,STR THD,7/16-20	3	
17	503696	CAGE,BALL,SIPHON	1	
18	900001	BALL,440SSTL,.500, 50	1	
19	1017320	SEAT,BALL,LOWER	1	
20	945037	O RING,VITON,1 TUB	1	
21	276024	VALVE ASSY,DRAIN	1	
22	1022779	CHUTE,DRAIN,ASSY	1	
23	982780	SCR,SKT,M5X10,ZN	2	
24	1021955	ADAPTER,FILTER,ASSY	1	D
27	1028305	FILTER,SATURN,MELTER,100 MESH,W/ O-RING	1	A
28	1017307	INSULATOR,PUMP	1	
29	982237	SCR,HEX,CAP,M6X35,ZN	4	
30	1022658	PISTON ASSY,HYDRAULIC,PROBLUE	1	C
31	982135	SCR,HEX,CAP,M6X30,ZN	1	
32	940332	O RING,VITON, 2X2.125X.063	2	
33	952100	CUP,U,VITON	1	
34	986331	RETAINING RING,INT,100,PUSHON	1	
35	984092	NUT,HEX,LOCK,TORQUE,M6,CLASS10	1	
36	982372	SCR,SKT,M5X12,BL	2	
37	1021270	PLATE,FILTER,ANTI ROTATE	1	
38	985401	PIN,ROLL,.188X1,STL,ZN	2	
39	900493	LUBRICANT,PARKER HI-TEMP,11208	0	
40	900344	LUBRICANT,NEVER SEEZ,8OZ CAN	0	
NOTE A: Refer to <i>Service Kits</i> for kit contents. B: See Figure 7-19 for exploded view C: See Figure 7-20 for exploded view D: O-ring and backup ring provided in pump service kit P/N 1028304				

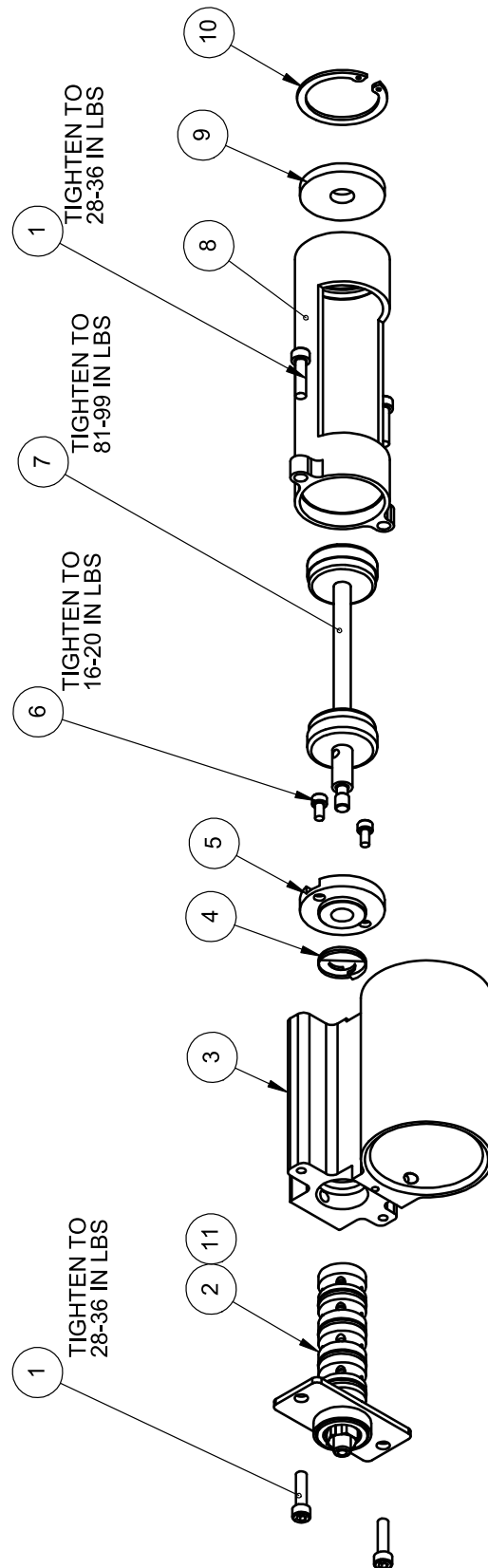


Figure 7-19 Shifter assembly/Standard Double-Acting pump

Item	Part	Description	Quantity	Note
1	982028	SCR,SKT,M5X20,BL	4	
2	1006027	SERVICE KIT, VALVE ASSY SP	1	
3	1021998	MANIFOLD,AIR,G1/8 PORT,PUMP	1	
4	333560	SPRING,WAVE,INCONEL,SP PUMP	1	
5	155057	DETENT,UPPER,SP	1	
6	982059	SCR,SKT,M4X8,BL	2	
7	164606	SERVICE KIT, ACTUATOR,MAGNETIC,ASSY,SP	1	A
8	155068	CAN,SP	1	
9	155067	DETENT,LOWER ,SP	1	
10	986714	RETAINING RING,INT,156,BOWED	1	
11	900493	LUBRICANT,PARKER HI-TEMP,11208	0	
NOTE A: Refer to <i>Service Kits</i> for kit contents.				

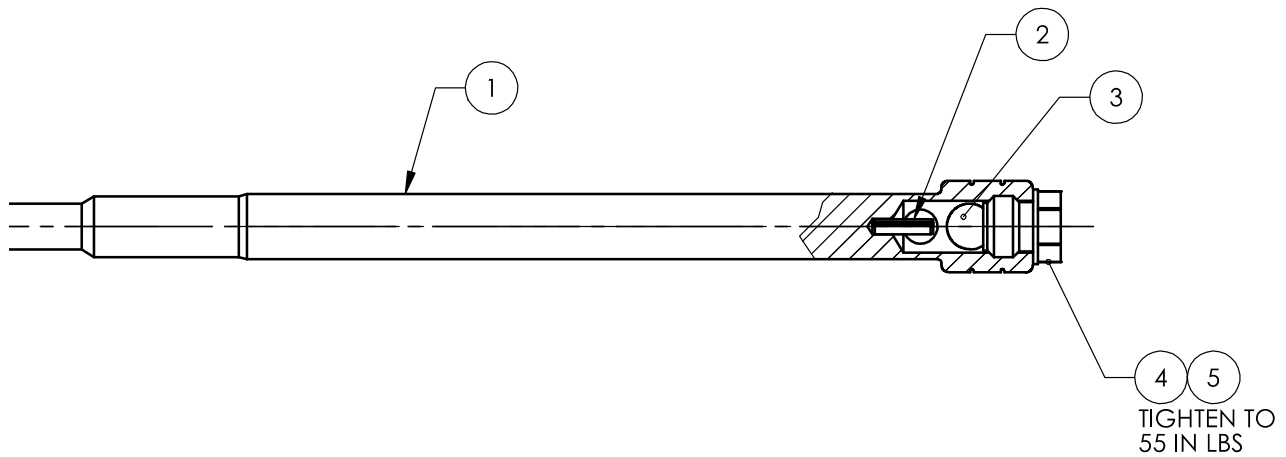


Figure 7-20 Piston assembly/Standard Double-Acting pump

Item	Part	Description	Quantity	Note
1	-----	PISTON,PUMP,15:1	1	
2	985302	PIN,ROLL,.125X .500,STL,ZN	1	
3	900000	BALL,440SSTL,.375, 50	1	
4	503709	SEAT,BALL,PRESSURE	1	
5	900470	ADHESIVE,LOCTITE 272,RED,HI TEMP,50ML	0	

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Single-Acting Pump Assembly

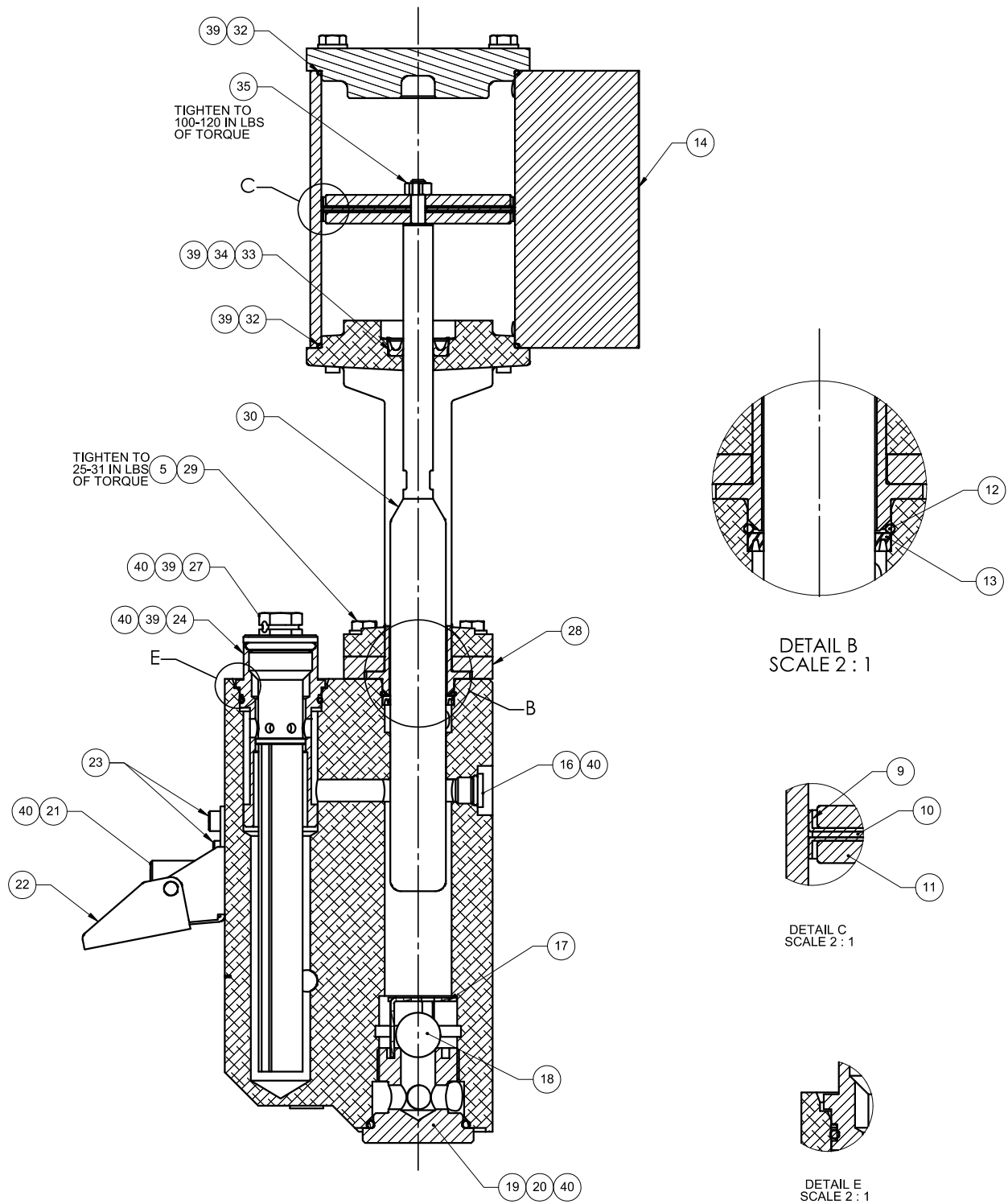


Figure 7-21 Single-acting pump (Part 1)

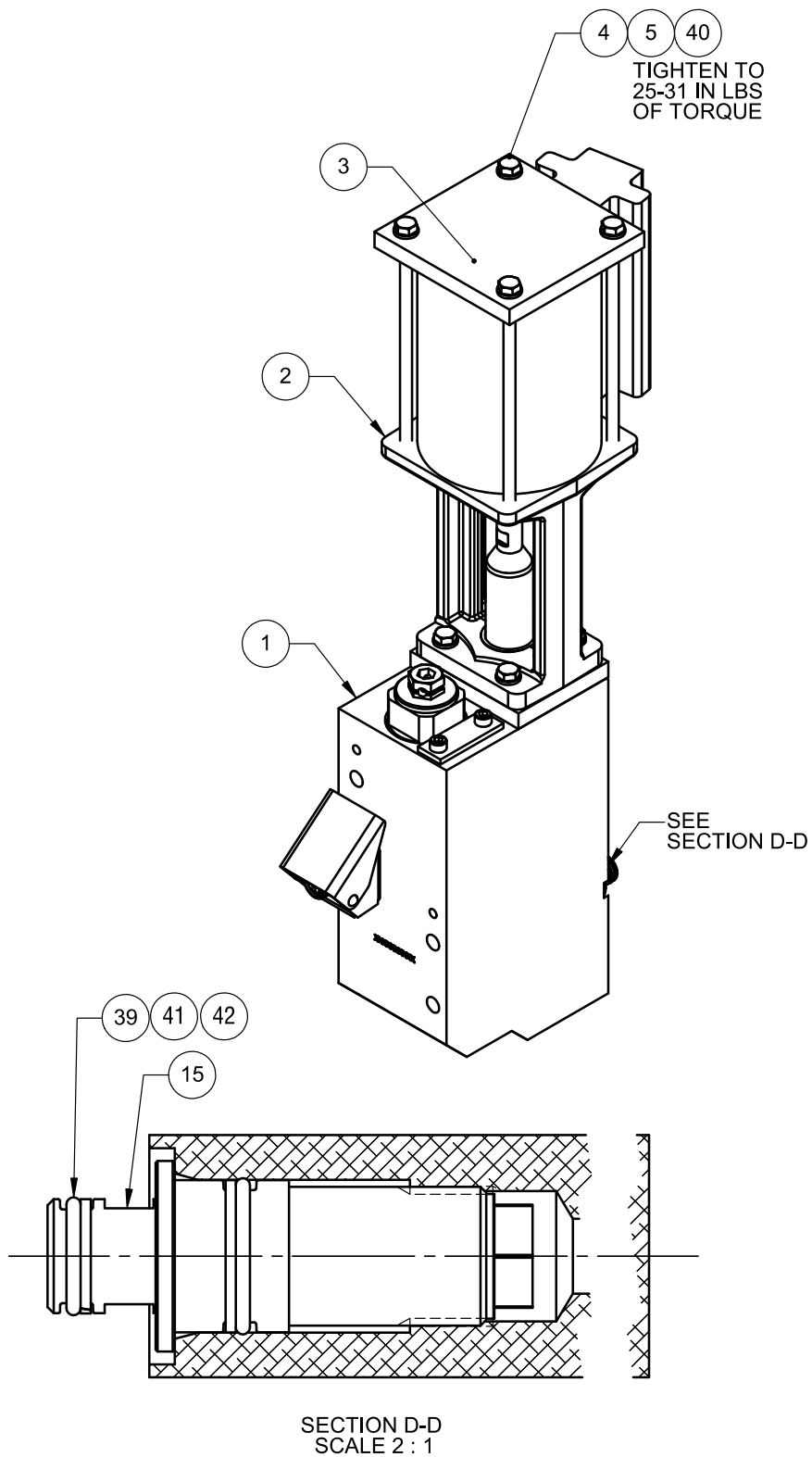


Figure 7-22 Single-acting pump (Part 2)

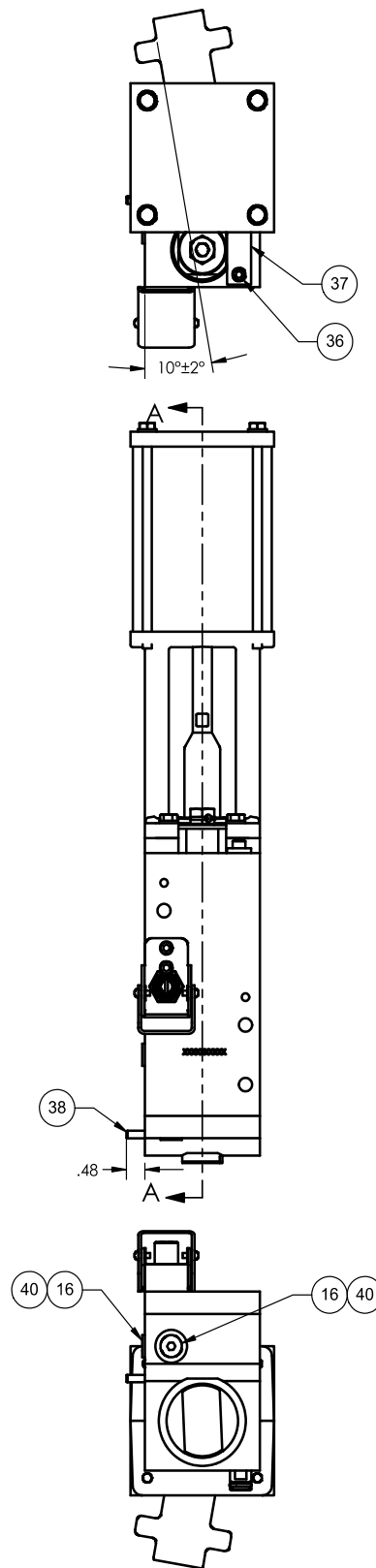


Figure 7-23 Single-acting pump (Part 3)

Item	Part	Description	Quantity	Note
1	1047431	BODY,PUMP-FILTER,SINGLE ACTING	1	
2	1044785	PUMP FRAME,HIGH OUTPUT MACHINE	1	
3	1044053	HEAD,CYLINDER PUMP,HIGH OUTPUT	1	
4	-----	SCR,HEX,CAP,M6 X 140, BL	4	
5	-----	WASHER,FLT,M,NARROW,M6,STL,ZN	8	
9	1044068	CUP,PISTON,PUMP,HIGH OUTPUT	2	
10	1044070	WASHER,SEAL,PISTON,PUMP,HIGH OUTPUT	1	
11	1044069	WASHER,CUP,PISTON,PUMP,HIGH OUTPUT	2	
12	940231	O RING,VITON, 1.063X1.188X.063, 10423 S	1	
13	1047747	SEAL,PUMP,HI VOL,S/A	1	
14	1047419	CYLINDER,AIR,PUMP,SINGLE ACTING	1	
15	1060355	SERVICE KIT, CHECK VALVE ASSY, SINGLE ACTING PUMP	1	A, B
16	973543	PLUG,O RING,STR THD,7/16-20	3	
17	1044790	CAGE,BALL,SIPHON,HIGH OUTPUT	1	
18	900023	BALL,440SSTL, .750, 50	1	
19	1044789	SEAT,BALL,SIPHON,HIGH OUTPUT	1	
20	303706	ORING,-920,VITON,1.475ID,.118W	1	
21	276024	VALVE ASSY,DRAIN	1	
22	1022779	CHUTE,DRAIN,ASSY	1	
23	982780	SCR,SKT,M5X10,ZN	2	
24	1021955	ADAPTER,FILTER,ASSY	1	B
27	1028305	FILTER,SATURN,MELTER,100 MESH,W/ O-RING	1	A
28	1045950	INSULATOR,PUMP FRAME,HIGH OUTPUT	1	
29	982237	SCR,HEX,CAP,M6X35,ZN	4	
30	1047430	PLUNGER,PUMP,SINGLE ACTING	1	
32	940420	O RING,VITON, 3.250X3.375X.063	2	
33	1044194	UCUP,.500 ID,1 OD, .250,VITON	1	
34	1047615	RETAINING RING,INT,125,PUSHON	1	
35	984092	NUT,HEX,LOCK,TORQUE,M6,CLASS10	1	
36	982372	SCR,SKT,M5X12,BL	2	
37	1021270	PLATE,FILTER,ANTI ROTATE	1	
38	-----	PIN,ROLL,.188X1,STL,ZN	2	
39	900493	LUBRICANT,PARKER HI-TEMP,11208	0	
40	900344	LUBRICANT,NEVER SEEZ,8OZ CAN	0	
41	940133	O RING,VITON,.426ID X .070W,BR,10413	2	
42	954013	BACK-UP RING,SINGLE,7/16X9/16	2	

NOTE A: Refer to *Service Kits* for kit contents.

B: O-ring and backup ring provided in pump service kit P/N 1058308



Item	Part	Description	Quantity	Note
1	-----	MANIFOLD,6-HOSE,P10	1	
2	973583	PLUG,O RING,STR THD,1 5/16-12	2	
3	1017211	HANDLE,SHUT-OFF	1	
4	1028308	KIT, PRESSURE DISCHARGE VALVE	1	A
5	982178	SCR,SKT,M5X50,BL	3	
6	983035	WASHER,FLT,M,REG,5,STL,ZN	3	
7	982166	SCR,SKT,M5X16,BL	1	
8	983401	WASHER,LK,M,SPT,M5,STL,ZN	1	
9	983418	WASHER,FLT,M,OVERSIZED,5,STL,Z	1	
10	973574	PLUG,O RING,STR THD,9/16-18	15	
11	1017212	VALVE,SHUT-OFF	1	
12	1019515	ORING, VITON, .50 X .75 X .125	1	
13	942080	O RING,VITON,.6250X.8750	1	
14	-----	PIN,ROLL,.313X1.500,STL,ZN	3	
15	900493	LUBRICANT,PARKER HI-TEMP,11208	0	
16	900344	LUBRICANT,NEVER SEEZ,8OZ CAN	0	
17	1060358	KIT, SERVICE, PLUG,DISPLACER,MANIFOLD, S/A, W/ORING	1	A, B
NOTE A: Refer to <i>Service Kits</i> for kit contents. B: Used only in single-acting pump assembly kit P/N 1058306				

Lid Assembly

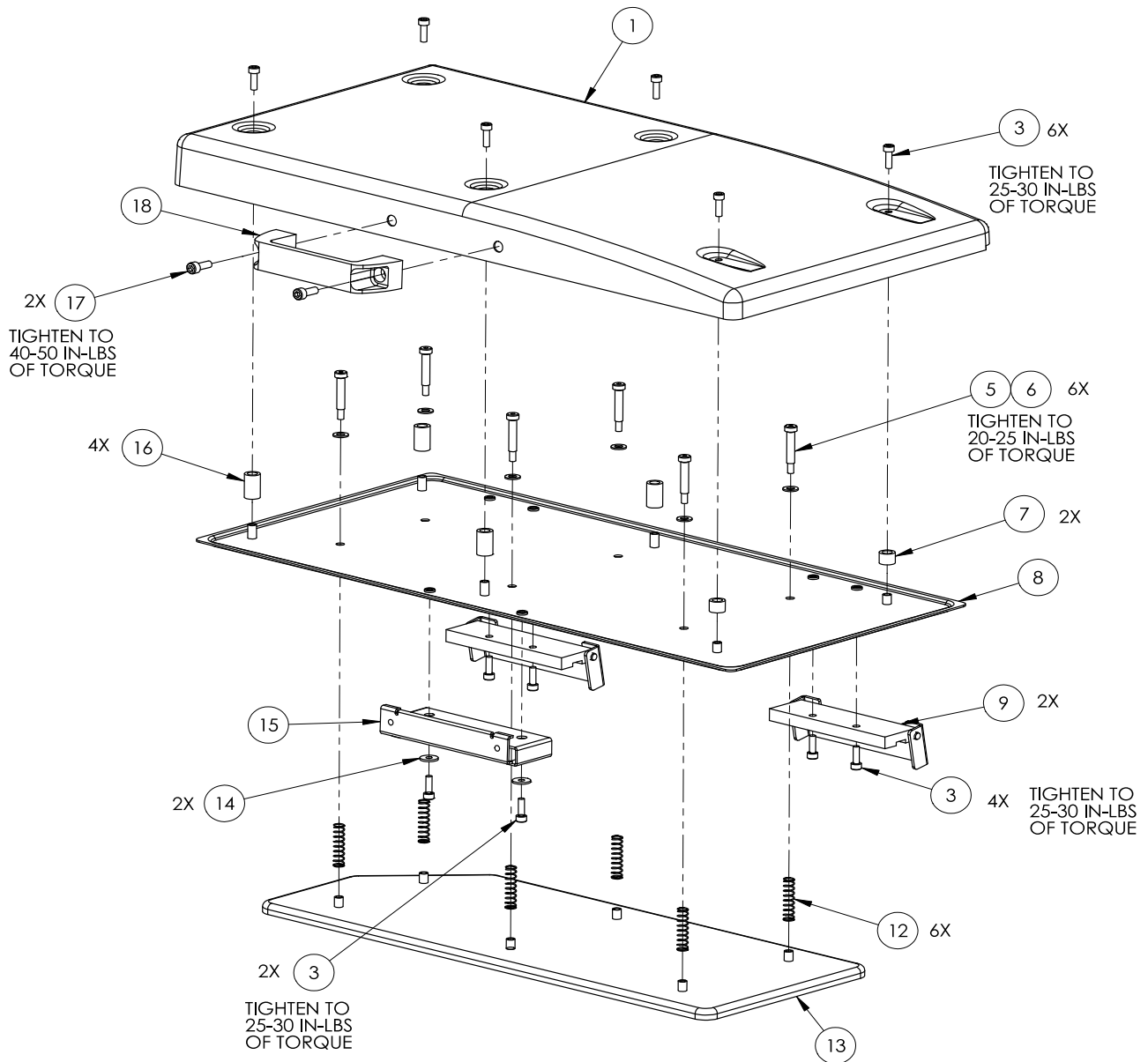


Figure 7-25 Lid assembly (P30/P50 shown)

Item	Part	Description	Quantity	Note
-	-----	Lid Assembly, P30/P50	-	A
-	-----	Lid Assembly, P15	-	A
1	1048905A	• OUTER LID,TANK,P30/P50	1.000	
	1047773A	• OUTER LID,TANK,P15	1.000	
3	1056364A	• SCR,SKT,M5X16,ZN	12 (P30/P50) 8 (P15)	
5	1052183A	• SCR,SHLDR,SKT,M5X30MM	6 (P30/P50) 4 (P15)	
6	983029A	• WASHER,FLT,M,REG,M6,STL,ZN	6 (P30/P50) 4 (P15)	
7	1050075A	• SPACER,13mmODx10mmLG,ALUMINUM	2.000	
8	1048901A	• LINER,LID,P30/P50	1.000	
	1047775A	• LINER,LID,P15	1.000	
9	1058428A	• HINGE ASSY,LID,P15,P30,P50	2 (P30/P50) 1 (P15)	
12	1052182A	• SPRING,COMPRESSION,1.500LGx0.360OD	6 (P30/P50) 4 (P15)	
13	1048904A	• INNER LID,P30/P50	1.000	
	1047774A	• INNER LID,P15	1.000	
14	983035A	• WASHER,FLT,M,REG,5,STL,ZN	2.000	
15	1050402A	• BRACKET,HANDLE,LID,PBII	1.000	
16	1050074A	• SPACER,13mmODx22mmLG,ALUMINUM	4 (P30/P50) 2 (P15)	
17	711253A	• SCR,SKT,M6X16,ZN	2.000	
18	1050403A	• HANDLE,LID,PB II	1.000	
NOTE A: Sold as kit. Refer to <i>Service Kits</i> for kit part number and contents				

Service Kits

Pneumatic Assembly - Standard Double Acting Pump - P/N 1058380

Description	Quantity
PNEUMATIC ASSY,STD DOUBLE ACTING PUMP	1
INST,PROBLUE PNEU PANEL ASSY SERV KIT,P4	1

Pneumatic Assembly - High-output Double-Acting Pump - P/N 1058383

Description	Quantity
PNEUMATIC ASSY,H.O. DOUBLE ACTING PUMP	1
INST,PROBLUE PNEU PANEL ASSY SERV KIT,P4	1

Pneumatic Assembly - Single Acting Pump - P/N 1058385

Description	Quantity
PNEUMATIC ASSY,SINGLE ACTING PUMP	1
INST,PROBLUE PNEU PANEL ASSY SERV KIT,P4	1

Standard Double-Acting Pump Replacement Kit - P/N 1028303

Description	Quantity
Pump, piston, 14:1	1
O-ring, Viton, 0.50 x 0.75 x 0.125 in.	1
O-ring, Viton, 0.812 x 0.062 x 0.125 in.	1
Elbow, male, 6 mm tube, G 1/8	1
Lubricant, Parker, hi-temperature, 1/2 oz.	1
INST,SERV KIT,PUMP HO P15/30/50;SA P15	1

Single-Acting Pump Replacement Kit - P/N 1058306

Description	Quantity
PUMP ASSY,SINGLE ACTING	1
ORING, VITON, .50 X .75 X .125	1
O RING,VITON, .812X1.062X.125	1
ELBOW, MALE,6 MM TUBE X G 1/8	2
GREASE,HI-TEMP, .50OZ,SLUBE 884-.50	1
INST,PROBLUE PUMP ASSY SERV KIT,P4,P7&P10	1

High-Output Double-Acting Pump Replacement Kit - P/N 1058305

Description	Quantity
PUMP ASSY,DOUBLE ACTING,HIGH OUTPUT	1
ORING, VITON, .50 X .75 X .125	1
O RING,VITON, .812X1.062X.125	1
ELBOW, MALE,6 MM TUBE X G 1/8	1
GREASE,HI-TEMP ,.50OZ,SLUBE 884-.50	1
INST,PROBLUE PUMP ASSY SERV KIT,P4,P7&P10	1

Double-Acting Pump Service Kit - P/N 1028304

Description	Quantity
O-ring, Viton, 0.426 x 0.070 in.	2
O-ring, Viton, 2.00 x 2.125 x 0.063 in.	2
O-ring, Viton, 0.50 x 0.75 x 0.125 in.	1
O-ring, Viton, 0.812 x 0.062 x 0.125 in.	1
O-ring, Viton, 0.739 x 0.70 in.	4
Cup, U, Viton	1
Backup ring, single, $\frac{7}{16} \times \frac{9}{16}$	2
Cup, piston	2
Seal, pump	1
Retaining ring, internal, 100, push-on	1
Nut, hex, lock, torque, M6	1
Screw, hex, cap, M6 x 120	4
Screw, hex, cap, M6 x 35	4
Washer, flat, M6	8
O-ring, Viton, 0.676 x 0.070	1
Lubrication, Parker, $\frac{1}{2}$ oz.	1
O-ring, Viton, 1.25 x 1.375 x .063	1
Backup ring, PTFE, 1.273 x .045 thick	1
O-ring, Viton, 1-inch tube	1
Plug, O-ring, $\frac{7}{16}$ -20	3
Service kit, SP lubricating oil	—

High-Output Double-Acting Pump Service Kit - P/N 1058307

Description	Quantity
O RING,VITON,.426ID X .070W,BR,10413	2
O RING,VITON,3.250X3.375X.063	2
ORING, VITON, .50 X .75 X .125	1
O RING,VITON, .812X1.062X.125	1
O RING,VITON,.739ID X .070W,BR,10418	4
UCUP,.500 ID,1 OD,.250,VITON	1
BACK-UP RING,SINGLE,7/16X9/16	2
CUP,PISTON,PUMP.HIGH OUTPUT	2
SEAL,PUMP,HI VOL,MPL	1
RETAINING RING,INT,125,PUSHON	1
NUT,HEX,LOCK,TORQUE,M6,CLASS10	1
SCR,HEX,CAP,M6X120,ZN	4
SCR,HEX,CAP,M6X35,ZN	4
WASHER,FLT,M,NARROW,M6,STL,ZN	8
O RING,VITON,.938X1.063X.063	1
GREASE,HI-TEMP,.50OZ,SLUBE 884-.50	1
O RING,VITON, 1.250X1.375X.063	1
BACKUPRING,ST,026,PTFE,1.273ID,.045TK	1
SERVICE KIT,SP LUBRICATING OIL	1
ORING,-920,VITON,1.475ID,.118W	1
PLUG,O RING,STR THD,7/16-20	3
INST,SERV KIT,PUMP HO P15/30/50;SA P15	1

Single-Acting Pump Service Kit - P/N 1058308

Description	Quantity
O RING,VITON,.426ID X .070W,BR,10413	1
O RING,VITON,3.250X3.375X.063	2
ORING, VITON, .50 X .75 X .125	1
O RING,VITON, .812X1.062X.125	1
O RING,VITON,.614IDX.070W,BR,10416	1
UCUP,.500 ID,1 OD,.250,VITON	1
BACK-UP RING,SINGLE,7/16X9/16	1
CUP,PISTON,PUMP.HIGH OUTPUT	2
SEAL,PUMP,HI VOL,SD	1
RETAINING RING,INT,125,PUSHON	1
NUT,HEX,LOCK,TORQUE,M6,CLASS10	1
SCR,HEX,CAP,M6X140,ZN	4
SCR,HEX,CAP,M6X35,ZN	4
WASHER,FLT,M,NARROW,M6,STL,ZN	8
O RING,VITON,1.063X1.188X.063,10423 S	1
GREASE,HI-TEMP,.50OZ,SLUBE 884-.50	1
O RING,VITON, 1.250X1.375X.063	1
BACKUPRING,ST,026,PTFE,1.273ID,.045TK	1
BACK-UP RING,SINGLE,5/8X3/4	1
ORING,-920,VITON,1.475ID,.118W	1
PLUG,O RING,STR THD,7/16-20	3
INST,SERV KIT,PUMP HO P15/30/50;SA P15	1

**Fork Assembly Service Kit - P/N 1060354 (High-output pump),
166880(Standard pump)**

Description	Quantity
FORK ASSEMBLY,MAGNETIC,PUMP,H.O.	1

SP Valve Service Kit - P/N 1006027

Description	Quantity
VALVE ASSEMBLY, SP	1

Magnetic Actuator Service Kit - P/N 104606

Description	Quantity
ACTUATOR,MAGNETIC,ASSY,SP	1

Single-Acting Pump Check Valve - P/N 1060355

Description	Quantity
CHECK VALVE ASSEMBLY, SINGLE-ACTING PUMP	1

Filter, 100-mesh - P/N 1028305

Description	Quantity
Filter assembly, 100-mesh	1

Pressure Discharge Valve Service Kit - P/N 1028308

Description	Quantity
Valve assembly, pressure discharge	1
Screw, hex, M5 x 50	3
Tee, run, 6-mm tube, G ¹ / ₈	1
Instruction, pressure discharge valve service kit, ProBlue	1

Central Processor Unit (CPU) Replacement Kit - P/N 1028325

Description	Quantity
PCA, display/CPU	1
Stand-off, hex, M3 x 8 mm	6
Washer, lock, M3	6
INST, CPU REPLACEMENT, PROBLUE	6

Main PCA Replacement Kit - P/N 1054008

Description	Quantity
MOUNTING PLATE ASSY,MAIN PCA	1
INST,KIT,MAIN PCA,P15/30/50	1

400/480V Fuse Service Kit - P/N 1058426

Description	Quantity
FUSE,15.00,TIME-DELAY,600V	3

Hose/Applicator Module Replacement Kit - P/N 1028328

Description	Quantity
Module assembly, power, removable	1

Hose/Applicator Module Fuse Replacement Kit - 1028331

Description	Quantity
Fuse, 6.30, fast-acting, 250 V, 5 x 2 (Refer to Table 6-4 for fuse types and locations)	4
Cover, fuse, 5 x 20 mm	4

Driver Board Fuse Service Kit - P/N 1054009

Description	Quantity
FUSE,25.00,FAS-ACTING,600V	2
COVER,FUSE,.41 X 1.50	2

RTD Service Kit - P/N 1028320

Description	Quantity
HARNESS,WIRE,RT	1
Screw, hex, M3 x 20	1
Washer, lock, spring, M3	1
Terminal block, 380 V	1
O-ring, Viton, 0.50 x 0.75 x. 0.125 in.	1
O-ring, Viton, 0.812 x 0.062 x 0.125 in	1
Compound, thermal, 1 gram	1

Thermostat Service Kit - P/N 1028321

Description	Quantity
Thermostat, OOR, 500 degree, push-on	1
Screw, hex, M4 x 6	2
Compound, thermal, 1 gram	1

Manifold (with Heater Block) Service Kit, DA Pumps - P/Ns 1064651 (4H, 230V), 1064653 (6H, 230V)

Description	Quantity
HEATER BLOCK,PROBLUE	1
MANIFOLD ASSY	1
SCR,SKT,M5X25,BL	5
WASHER,LK,M,SPT,M5,STL,ZN	5
ORING, VITON, .50 X .75 X .125	2
O RING,VITON, .812X1.062X.125	1
O-RING,VITON,50 DURO,-116,.750X.938X.094	2
O RING,VITON,.426ID X .070W,BR,10413	2
INST, MANIFOLD/HEATER SERVICE KIT	1

Heater Block Service Kit - P/Ns 1064649 (230V)

Description	Quantity
HEATER BLOCK,PROBLUE,230V	1
SCR,SKT,M5X25,BL	5
WASHER,LK,M,SPT,M5,STL,ZN	5
O RING,VITON, .812X1.062X.125	1
INST, PROBLUE THERMAL BLOCK INSTALLATION	1
INST, HEATER DISPOSAL (WORDLESS)	1

Displacement Plug Service Kit - P/N 1060358

Description	Quantity
PLUG, DISPLACER, MANIFOLD, SA	1

Manifold Guard Replacement Kit - P/N 1031871

Description	Quantity
Guard, wire frame, manifold, 6-hose	1
Mount, lower, wire guard, 6-hose	2
Mount, upper B, wire guard, 6-hose	1
Mount, upper A, wire guard, 6-hose	1
Screw, socket-head, M5 x 20	3

Manifold Service Kit - P/N 1028309

Description	Quantity
O-ring, Viton, 0.050 x 0.75 x 0.125 in.	3
O-ring, Viton, 0.625 x 0.875 in.	1
O-ring, Viton, 0.812 x 0.062 x 0.125 in.	1
O-ring, Viton, 0.750 x 0.938 x 0.094 in.	2
Lubricant, Parker, 1/2 oz	1

Lid Assembly P15 - 1060328

Description	Quantity
OUTER LID,TANK,P15	1
SCR,SKT,M5X16,ZN	8
SCR,SHLDR,SKT,M5X30MM	4
WASHER,FLT,M,REG,M6,STL,ZN	4
SPACER,13mmODx10mmLG,ALUMINUM	2
LINER,LID,P15	1
HINGE ASSY,LID,P15,P30,P50	1
SPRING,COMPRESSION,1.500LGx0.360OD	4
INNER LID,P15	1
WASHER,FLT,M,REG,5,STL,ZN	2
BRACKET,HANDLE,LID,PBII	1
SPACER,13mmODx22mmLG,ALUMINUM	2
SCR,SKT,M6X16,ZN	2
HANDLE,LID,PB II	1

Lid Assembly P30/P50 - 1060361

Description	Quantity
OUTER LID,TANK,P30/P50	1
SCR,SKT,M5X16,ZN	8
SCR,SHLDR,SKT,M5X30MM,BL	4
WASHER,FLT,M,REG,M6,STL,ZN	4
SPACER,13mmODx10mmLG,ALUMINUM	2
LINER,LID,P30/P50	1
HINGE ASSY,LID,P15,P30,P50	1
SPRING,COMPRESSION,1.500LGx0.360OD	4
INNER LID,P30/P50	1
WASHER,FLT,M,REG,5,STL,ZN	2
BRACKET,HANDLE,LID,PBII	1
SPACER,13mmODx22mmLG,ALUMINUM	2
SCR,SKT,M6X16,ZN	2
HANDLE,LID,PB II	1

Melter Cover Replacement Kit - P/N 1060357 (P15), 1059897 (P30), 1059898 (P50)

Description	Quantity
Assembly, melter cover	1

P15/30/50 Pump Cover Replacement Kit - P/N 1060350

Description	Quantity
Assembly, cover, pump, p15/30/50	1

Ebox Door Replacement Kit - P/N 1060352 (P15), 1059899 (P30), 1059910 (P50)

Description	Quantity
Cover, door, ebox	1

Operator's Panel Replacement Kit - P/N 1028327

Description	Quantity
Panel assembly, front, electrical enclosure	1

Filter Door Service Kit - P/N 1060351

Description	Quantity
DOOR ASSEMBLY, FILTER, P15/30/50	1

Tank Replacement Kit - P/N 1060356 (P15), 1061520 (P30), 1061613 (P50)

Description	Quantity
Machining,final,TANK	1
TAPE,INSULATION,TANK,PROBLUE	1
STRAINER,TANK,P15/30/50	2
WASHER,FLT,E,.375X.875X.083 STL ZN	1
SCREEN,LEVEL SWITCH,PB II	1
SEAL,TANK,P15	1
SWITCH,LEVEL,ASSY,P15	1
NUT,HEX,M5,STL,ZN	2
INST,KIT,TANK REPLACEMENT	1
INST, LEVEL SWITCH, PROBLUE	1

P15/P30 Single-Position Level Switch- P/N 1060329

Description	Quantity
SWITCH,LEVEL,ASSY,P15/P30	1
NUT,HEX,M5,STL,ZN	2

P50 Single-Position Level Switch - P/N 1060362

Description	Quantity
SWITCH,LEVEL,ASSY,P50	1
NUT,HEX,M5,STL,ZN	2

P15/P30 3-Position Level Switch - P/N 1059911

Description	Quantity
SWITCH,LEVEL,ASSY,3-POSITION,P15/30	1
NUT,HEX,M5,STL,ZN	2

Input/Output Expansion Card Add-on Kit - P/N 1036607

Description	Quantity
PCA, OPTIONAL I/O	1
TERMINAL BLOCK CONNECTOR, 10 POSITION (1-10)	1
TERMINAL BLOCK CONNECTOR, 10 POSITION (11-20)	1
SCREW, MACHINE, PAN-HEAD, M3 X 6	8
STANDOFF, MALE/FEMALE, M3 X 12	2

Profinet Card

Part	Description	Quantity
1124963	KIT, PROFINET CARD	—
-----	• PCA,ANYBUS-S,PROFIBUS,17MM PINS	1
-----	• MACH SCRM,PAN,REC,M3X6,SEMS	3
-----	• STANDOFF,MALE/FEMALE, M3X12	2

Profibus Card - P/N 1053300

Description	Quantity
PCA,ANYBUS-S,PROFIBUS,17MM PINS	1
MACHSCRM,PAN,REC,M3X6,SEMS	3
MAN,PROFIBUS-DP AND DEVICENET FIELDBUS I	1
STANDOFF, MALE/FEMALE, M3 X 12	2

Ethernet IP Card - P/N 1053289

Description	Quantity
PCA,ANYBUS-S,ETHERNET,17MM PINS,PROGRAMM	1
MACHSCRM,PAN,REC,M3X6,SEMS	3
MAN,ETHERNET/IP FIELDBUS INTERFACE CARD	1
STANDOFF, MALE/FEMALE, M3 X 12	2

DeviceNet Card - P/N 1053288

Description	Quantity
PCA,ANYBUS-S,DEVICENET,17MM PINS	1
MACHSCRM,PAN,REC,M3X6,SEMS	3
MAN,PROFIBUS-DP AND DEVICENET FIELDBUS I	1
STANDOFF, MALE/FEMALE, M3 X 12	2

ControlNet Card - P/N 1094529

Description	Quantity
PCA,ANYBUS-S,CONTROLNET,17MM PINS	1
MACHSCRM,PAN,REC,M3X6,SEMS	3
STANDOFF, MALE/FEMALE, M3 X 12	2

Section 8

Specifications

General Specifications

Item	Data	Note
Weight of empty melter		
P15	66 kg (145 lb.)	
P30	81.6 (180 lb.)	
P50	87 (192 lb.)	
Hose/applicator capacity	6	A
Melt rate	88 kg/hr (40 lb/hr)	
Noise	64dB (A) at maximum pump speed	B
Workplace temperature	-5 to 50°C (23 to 122 °F)	
Pump Rate		
P15/Standard/14:1	32.7 kg/hr (72 lb/hr)	
P15/HO/16:1	60 kg/hr (130 lb/hr)	
P15/SA/12:1	108 kg/hr (240 lb/hr)	
P30/HO/16:1	59 kg/hr (130 lb/hr)	
P50/HO/16:1	59 kg/hr (130 lb/hr)	
NOTE A: Hose capacity depends on the number of hose/applicator modules installed. B: The noise level is measured at a distance of 1 m (3.3 ft.) from the surface of the melter.		

Pump Characteristics

Specification	Standard Double-acting	High-output Double-acting	Single-acting
Pressure Ratio (hydraulic:pneumatic)	15:1	16:1	12:1
Maximum Pump Rate with 1100 cps Material	1.2 lb/min (.54 kg/min)	2.17 lb/min (.98 kg/min)	4.0 lb/min (1.8 kg/min)
Displacement	.44 cu in/stroke (7.2 cc/stroke)	1.0 cu in/stroke (16 cc/stroke)	2.2 cu in/stroke (36 cc/stroke)
Recommended Viscosity Range	800 - 10,000 cps	800 - 10,000 cps	800 - 10,000 cps
Viscosity range with reduced performance	10,000 - 30,000 cps	10,000 - 30,000 cps	10,000 - 30,000 cps
Operating air pressure range	10psi to 90 psi (.69 Bar to 6.2 Bar)	10psi to 90 psi (.69 Bar to 6.2 Bar)	10psi to 90 psi (.69 Bar to 6.2 Bar)
Recharge time at 60 psi	N/A	N/A	800 milliseconds
Air consumption	2.0 SCFM at 60 psi and 1.2 lb/min (56 l/min at 4.1 Bar and .54 kg/min output)	3.5 SCFM at 60 psi and 2 lb/min output (100 l/min at 4.1 Bar and .91 kg/min output)	4.7 SCFM at 60 psi and maximum output (133 l/min at 4.1 Bar and maximum output)

Electrical Specifications

Item	Data	Note
Hose/applicator heating capacity	2, 4, or 6 hose/applicator pairs	A
Control temperature range	40 to 230 °C (100 to 450 °F)	
Control temperature accuracy	±1 °C	B
Ingress Protection (IP) rating	IP54	
Input voltage tolerance	+10%, -15%	
NOTE A: Dependent on melter configuration and addition of optional hose/applicator modules B: Flow setpoint at RTD		

Melter Power Requirements

Melter	Number of Hoses/ Applicators	Supply Power (Amp)		
		1-Phase*	3-Phase	
P15			Without Neutral	With Neutral
	2	22 A	15 A	9 A
	4	30 A	23 A	17A
	6	--	26 A	17A
P30 P50	2	26 A	19 A	13 A
	4	35 A	26 A	17 A
	6	--	26 A	17 A

*Requires voltage plug PN 1047167 or PN 1047171 (with neutral).

Melter Dimensions

P15 Melter

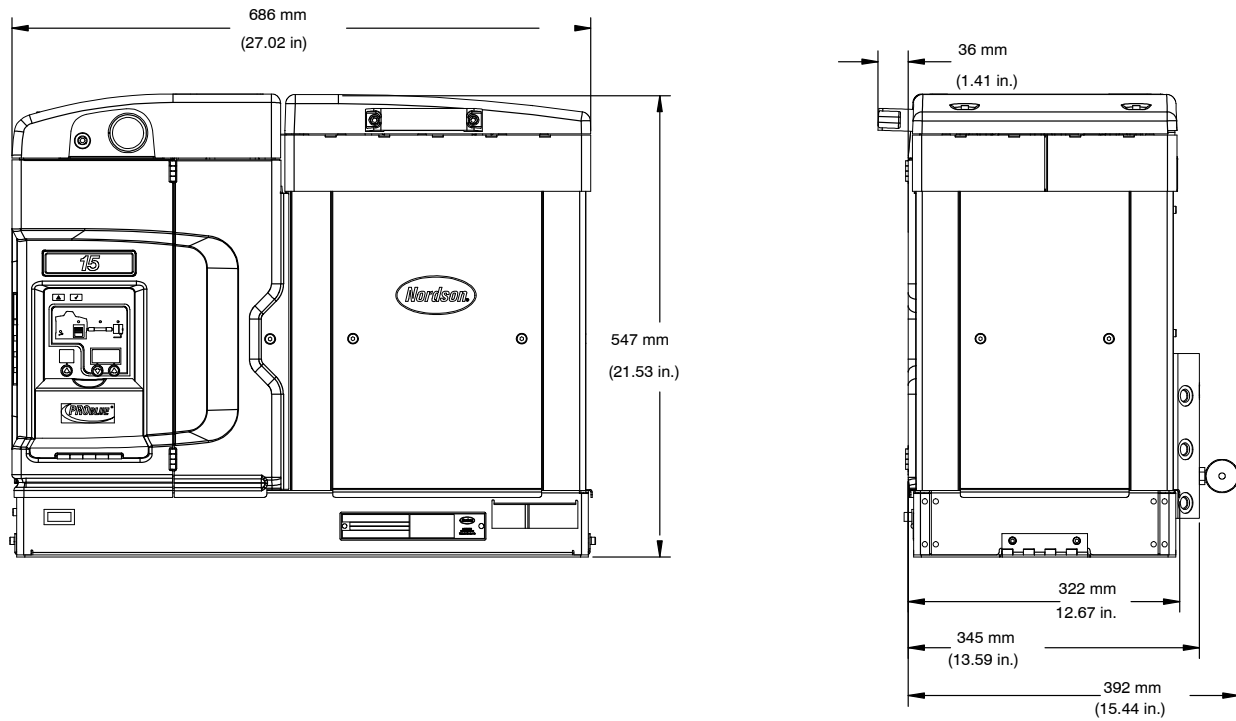


Figure 8-90 P15 Melter dimensions

P30 Melter

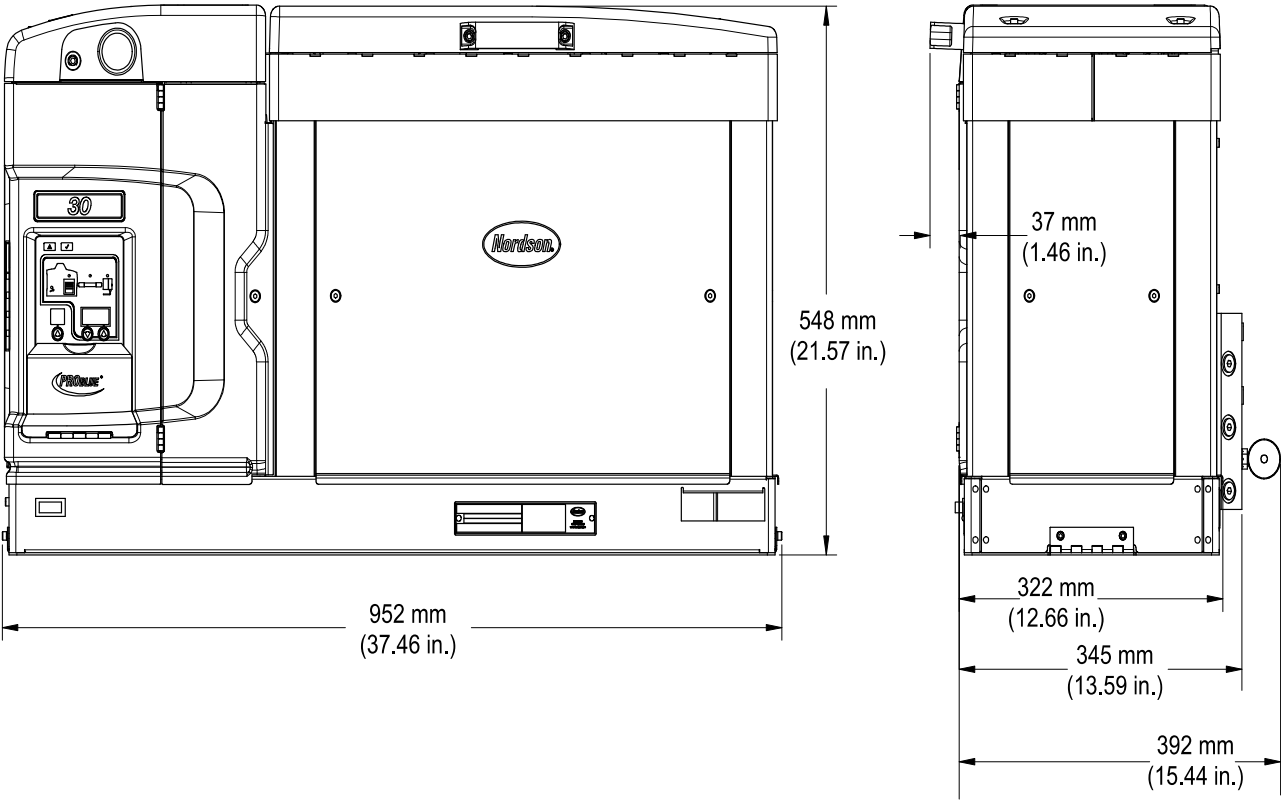


Figure 8-91 P30 Melter dimensions

P50 Melter

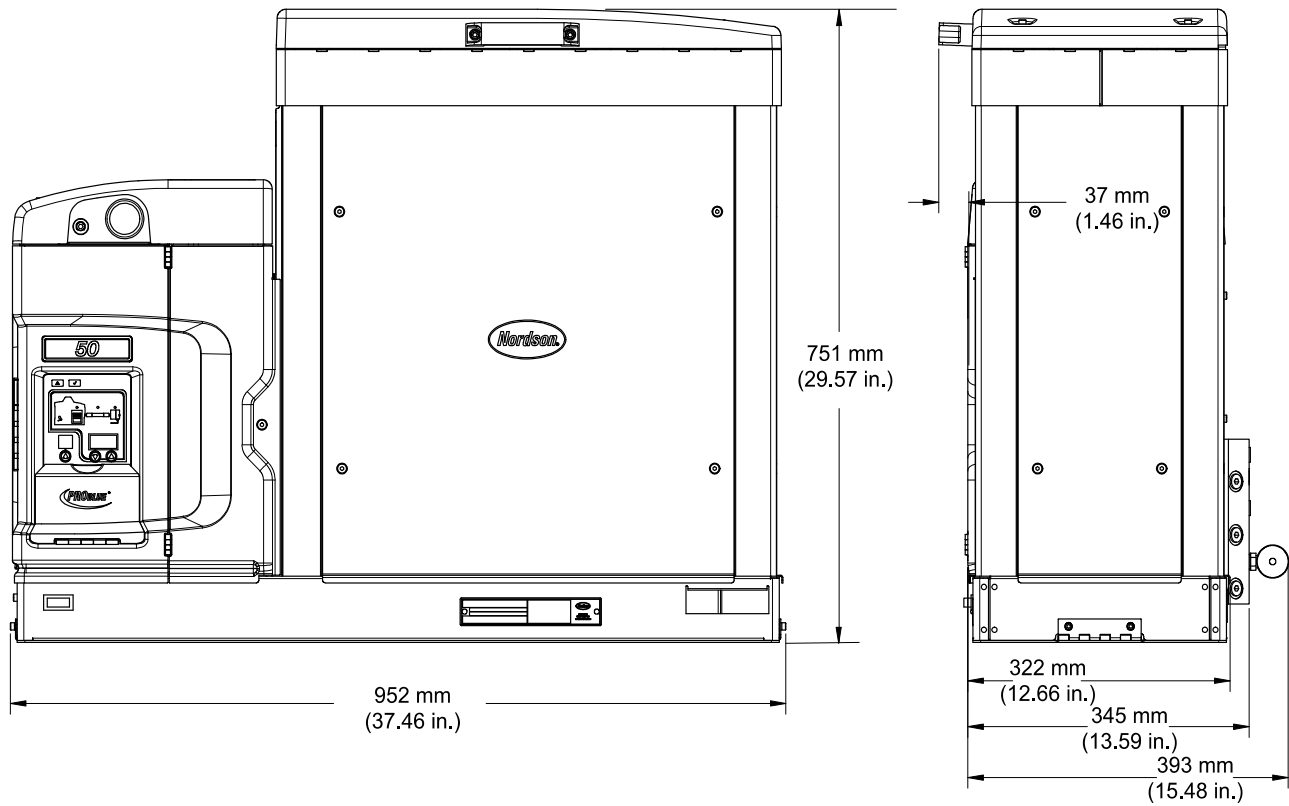


Figure 8-92 P50 Melter dimensions

Sub-Base Dimensions

P15 Sub-base

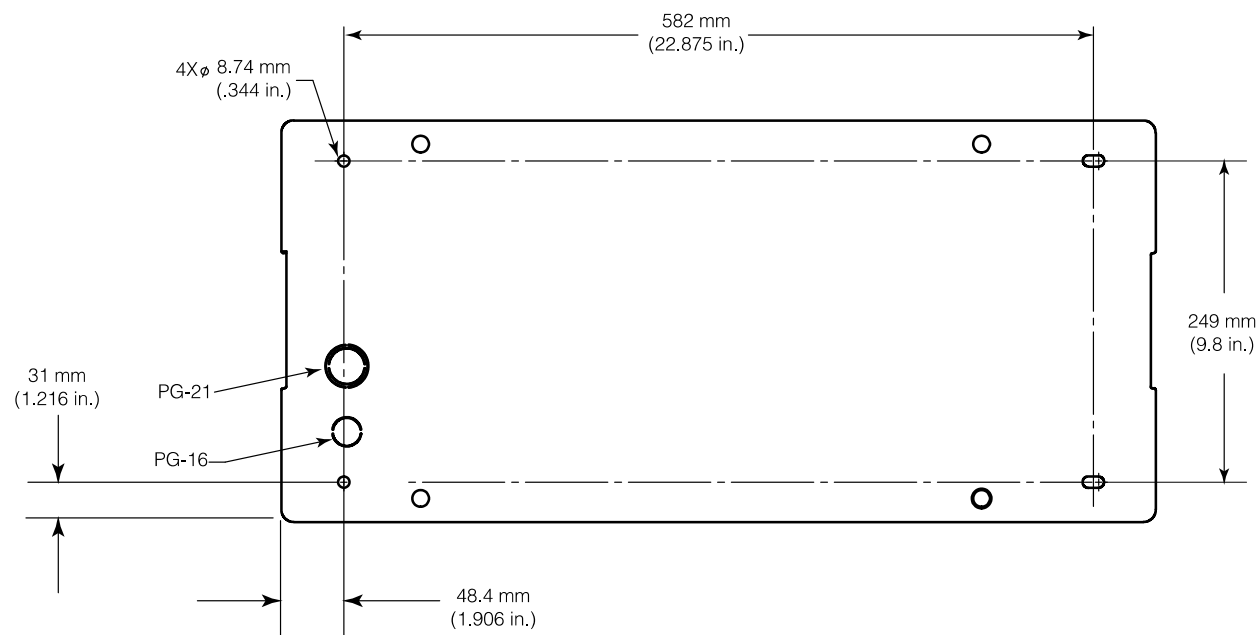


Figure 8-93 P15 Sub-base dimensions

P30/P50 Sub-base

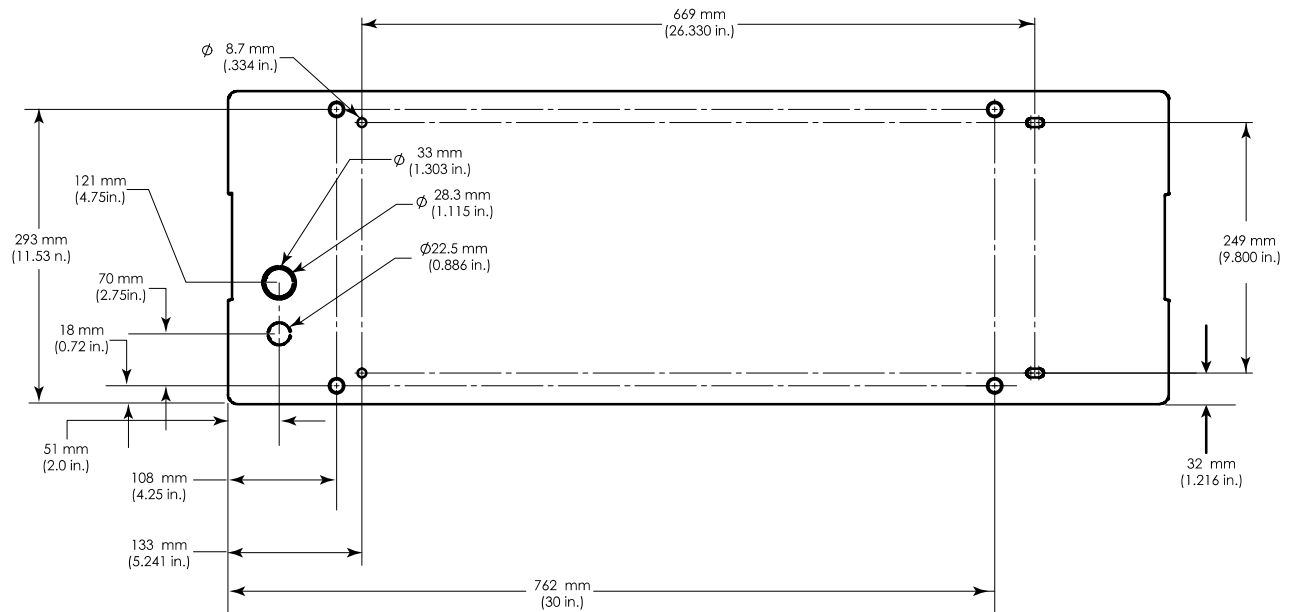
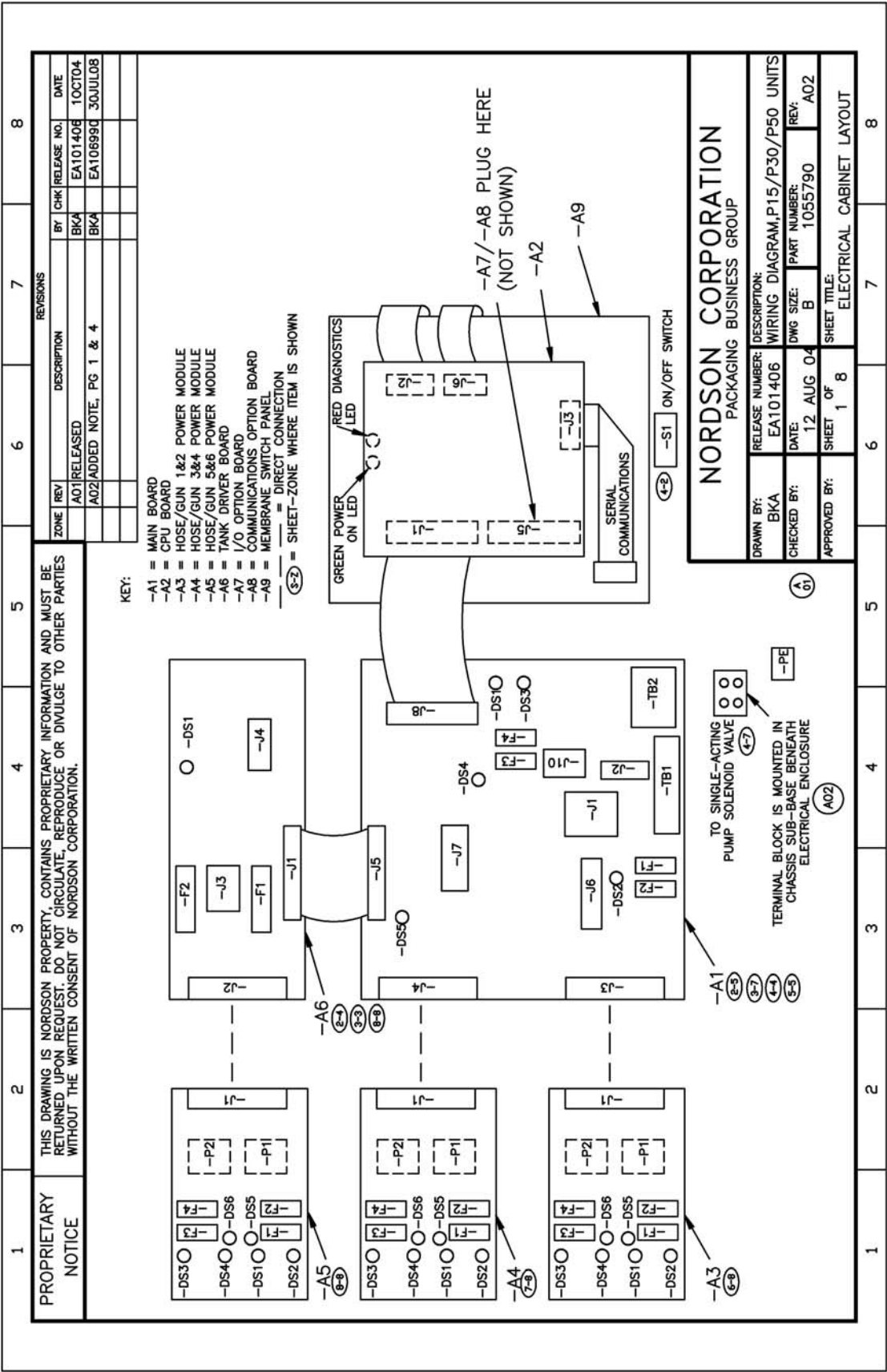
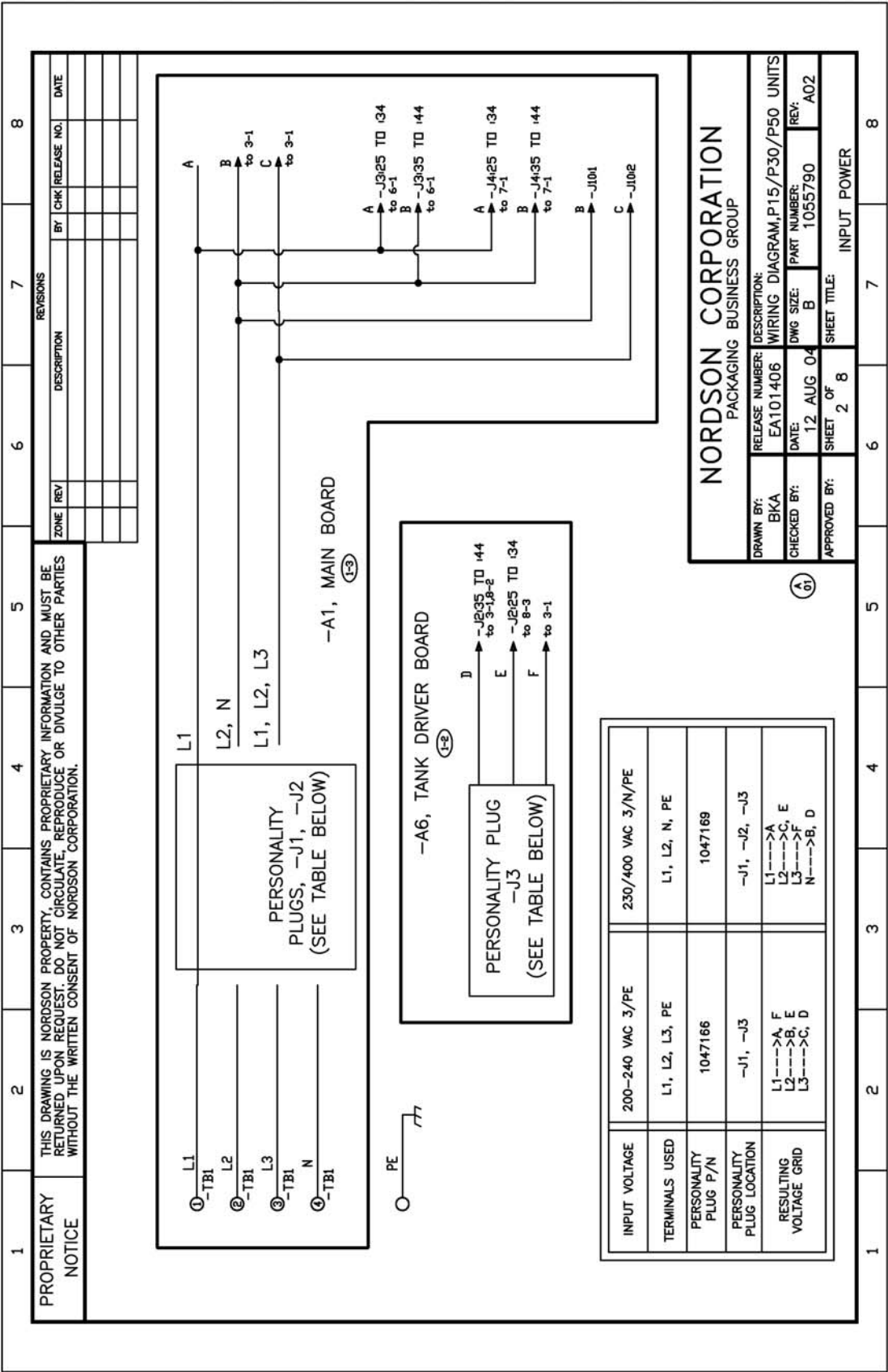


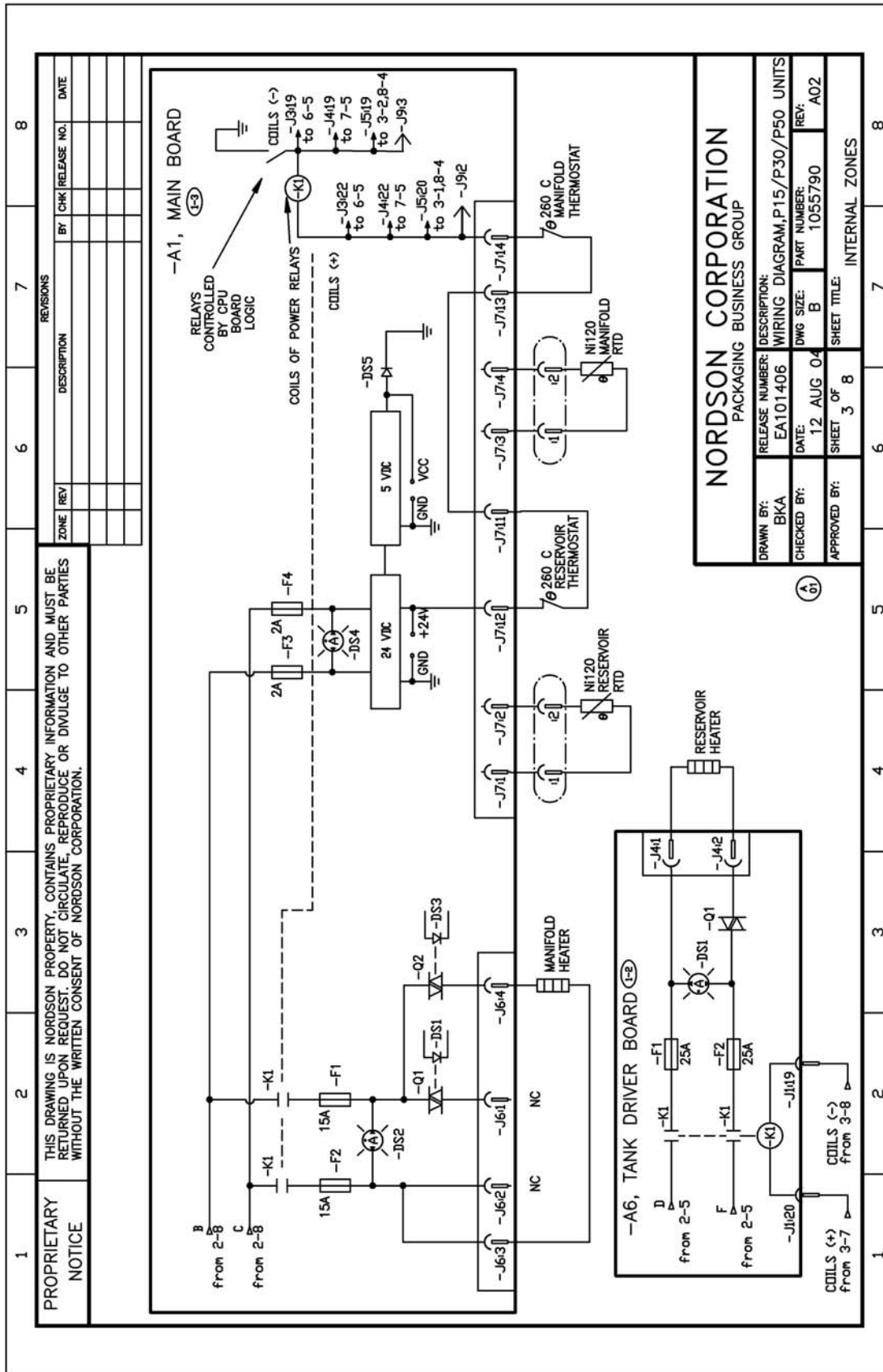
Figure 8-94 P30/P50 Sub-base dimensions

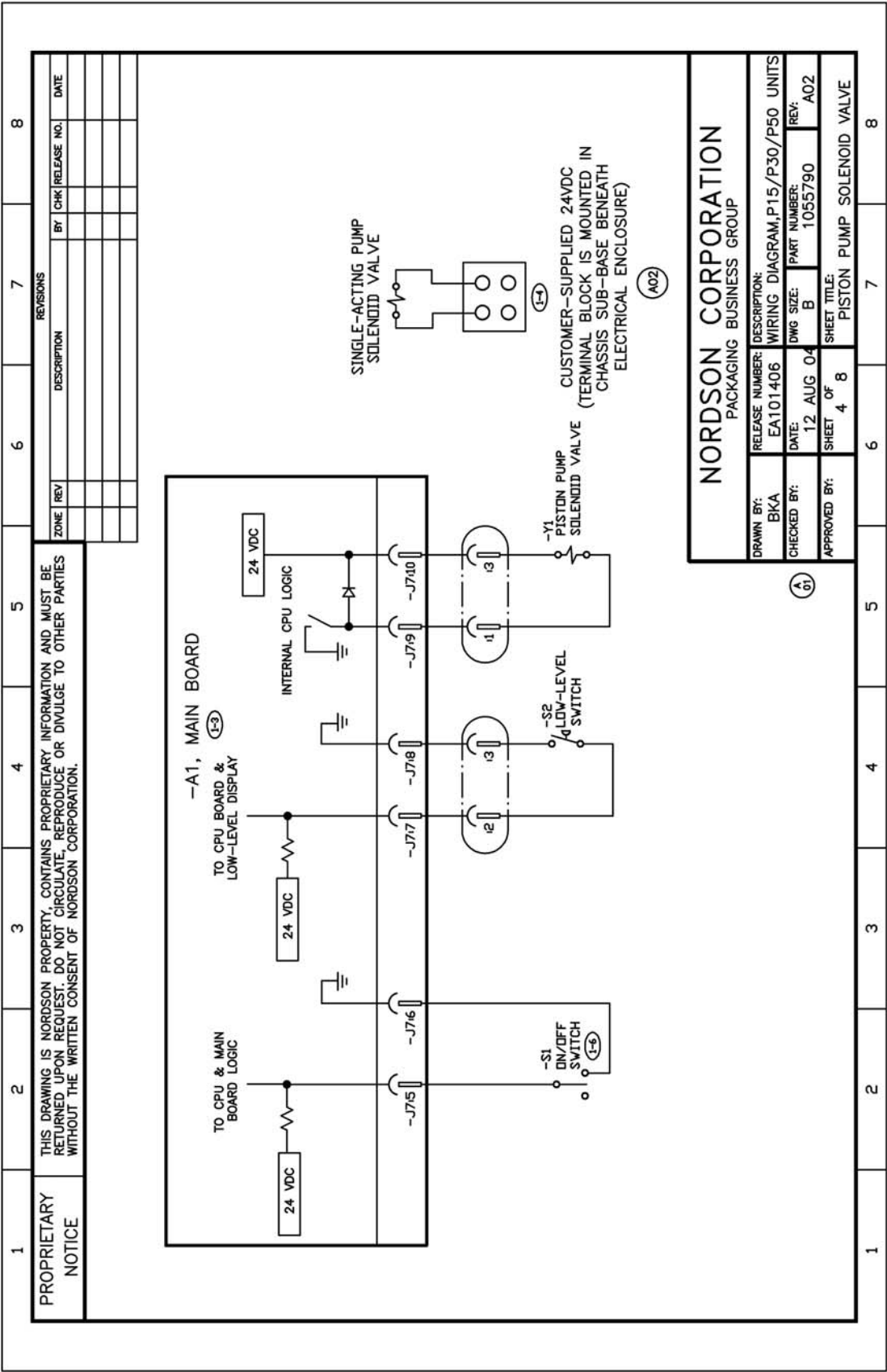
Wiring Diagrams—200/240 VAC Melter

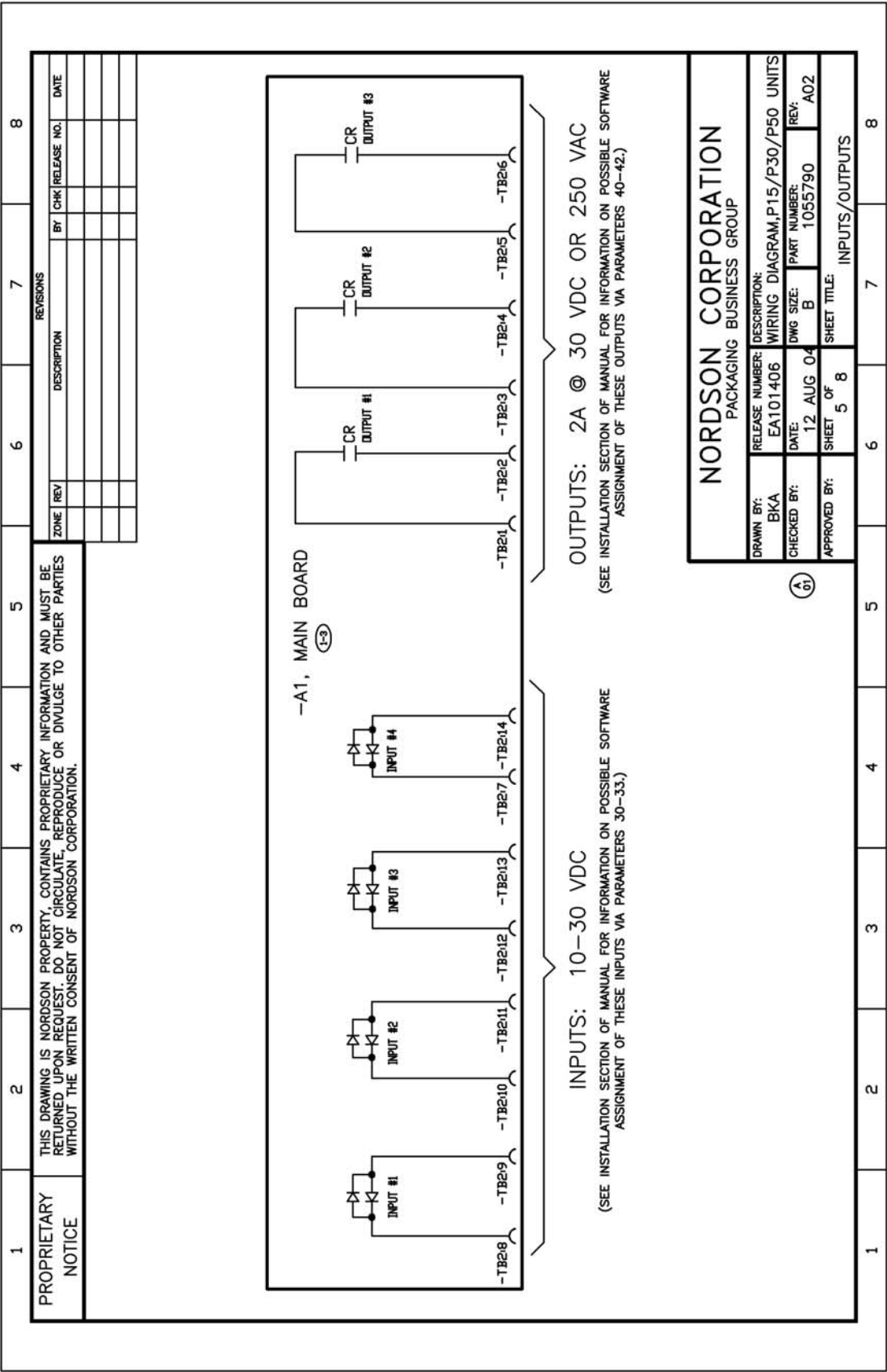
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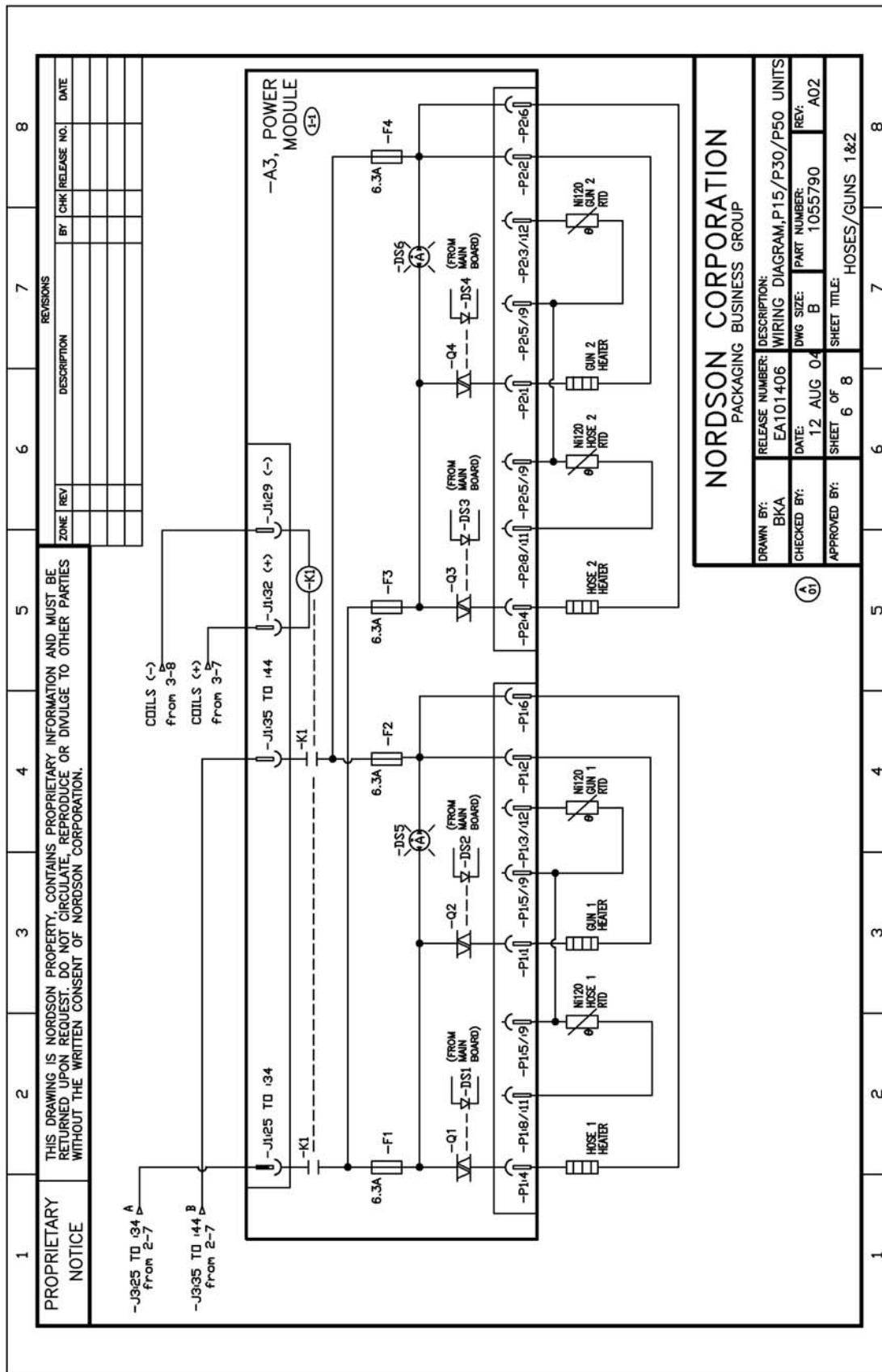


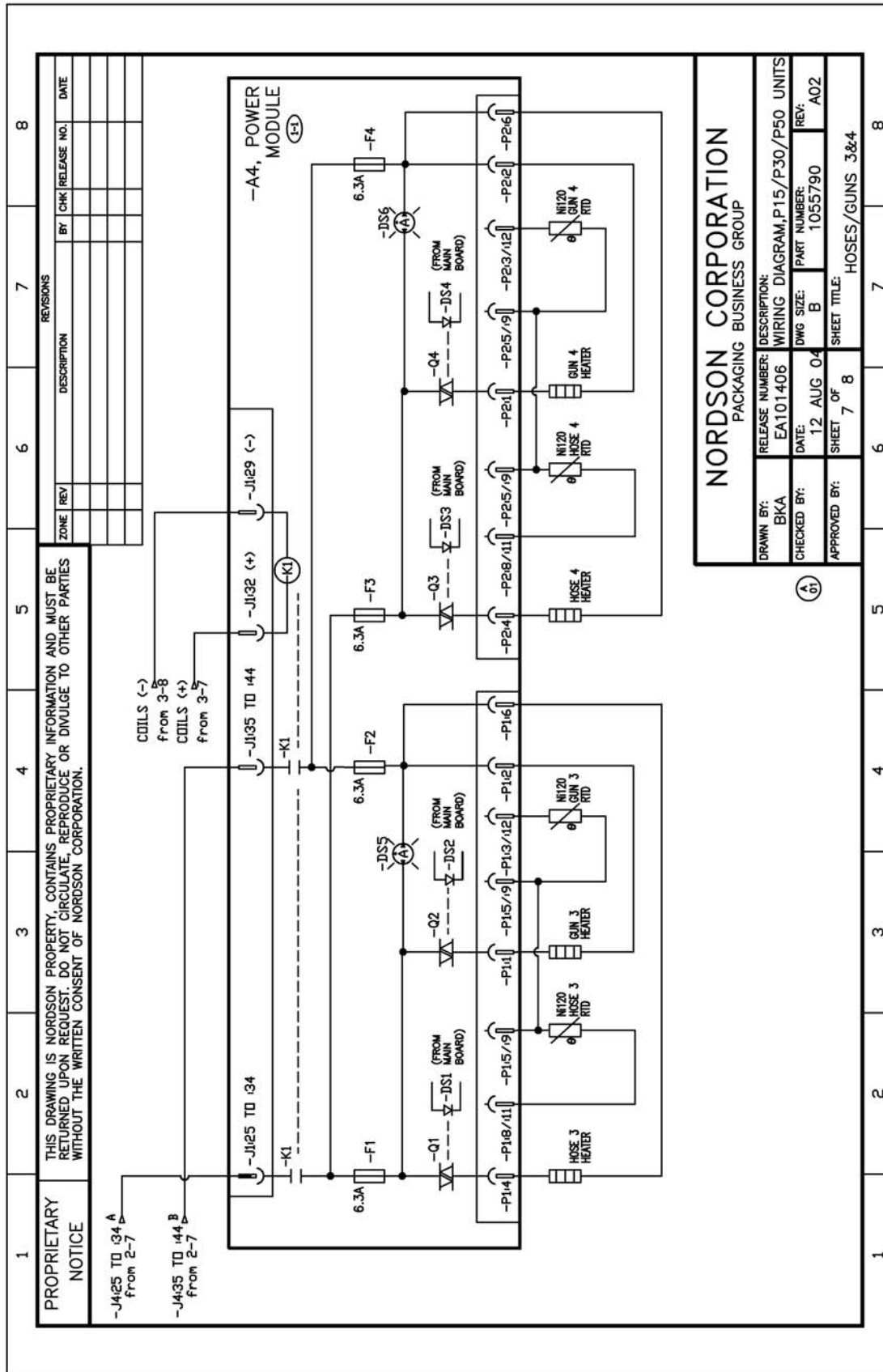


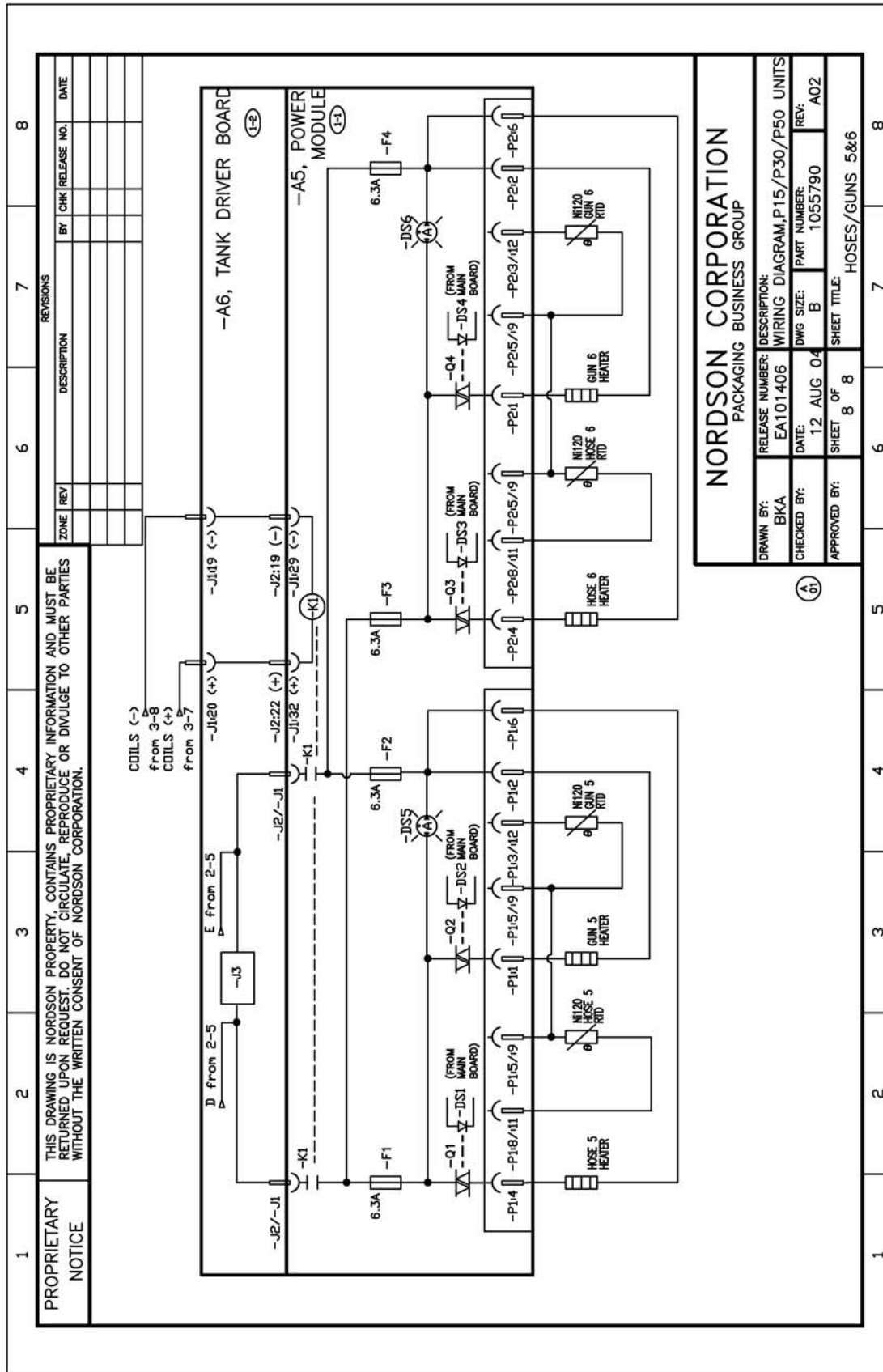












Appendix A

Calculating Melter Power Requirements

Before locating the melter on the production floor or attaching hoses and applicators to the melter, you must calculate the electrical power required by the hoses and applicators and confirm that the required power does not exceed maximum allowable wattages. Properly calculating melter power requirements will prevent damage to the melter and identify the maximum allowable distance between the melter and the point at which the hot melt is dispensed.

The following three maximum wattages must be considered when calculating the power required by the hoses and applicators.

- **Single-component maximum**—The wattage of any single hose or applicator
- **Hose/applicator pair maximum**—The wattage of any hose and applicator (hose/applicator pair)
- **Hose/applicator module maximum**—The wattage of any two hoses and two applicators (two hose/applicator pairs)

If your Nordson representative has already calculated the hose/applicator power requirements and confirmed that the maximum allowable wattages will not be exceeded, then no further calculation is necessary. However, you should re-evaluate the hose and applicator power requirements before you:

- add a new hose or applicator to the melter that was not factored into the original wattage evaluation
- replace an existing hose with a longer hose or an existing applicator with a larger applicator

To evaluate the hose/applicator power requirements

1. Match each hose and applicator pair and then match each pair to the hose/applicator module it will be connected to on the back of the melter.
2. Examine the identification tag or plate on each hose and applicator and record the wattage of each in Table A-1.
3. Add the sum of the wattages for each hose/applicator pair and the combined total wattage for each hose/applicator module.
4. Compare the wattages tabulated in Table A-1 with the associated maximum allowable wattages listed in Table A-2.
5. Do *one* of the following:
 - If each of the wattages calculated in step 3 *do not* exceed the associated maximum allowable wattages listed in Table A-2, then the power required by the hoses and applicators is within acceptable limits.
 - If any of the wattages calculated in step 3 *does* exceed an associated maximum allowable wattage listed in Table A-2, then the configuration or position of the hose/applicator pairs must be rearranged or shorter hoses must be used in order to reduce the power requirement.

Table A-1 Hose/Applicator Wattages

Module	Component Number	Type/Size	Wattage	Total Wattage
Hose/Applicator Module 1	Hose 1			
	Applicator 1			
	Hose 2			
	Applicator 2			
Total wattage of hose/applicator module 1 =				
Hose/Applicator Module 2	Hose 3			
	Applicator 3			
	Hose 4			
	Applicator 4			
Total wattage of hose/applicator module 2 =				
Hose/Applicator Module 3	Hose 5			
	Applicator 5			
	Hose 6			
	Applicator 6			
Total wattage of hose/applicator module 3 =				

Table A-2 Maximum Allowable Wattages

Component	Plant Voltage			
	200 VAC	220 VAC	230 VAC	240 VAC
Any hose or applicator	870 W	957 W	1000 W	1043 W
Any hose/applicator pair	1071 W	1179 W	1233 W	1286 W
Any hose/applicator module	1740 W	1913 W	2000 W	2086 W

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Appendix B

Operating Parameters

Operating parameters are organized in this appendix according to the logical groups listed in Table B-1. For information about selecting and editing operating parameters, refer to Section 3, *Installation, Setting Up the Melter*.

NOTE: Parameter numbers that are reserved or that are not used do not appear in this appendix.

Table B-1 Parameter Groups

Group	Parameters	Description
Standard	0 to 11 and 14	Frequently used parameters
Temperature Control	20 to 26	Control heater function
Input Setup	30 to 39	Configure the standard and optional inputs
Output Setup	40 to 46	Configure the standard and optional outputs
Seven-day Clock	50 to 77	Configure the clock feature

Standard

0 Enter Password

Description:	A user-defined password that prevents unauthorized changes to set-point temperatures and operating parameters.
Value:	0 to 9999
Resolution:	1
Default Value:	4000
Format:	—
Use:	This parameter only appears if a password is created using parameter 11 and then enabled using parameter 10. NOTE: The melter remains in the password-protected mode for two minutes after the last key press. After exiting the setup mode, attempting to re-enter the setup mode, even before two minutes has elapsed, will require you to re-enter the password.

1 Total Hours with Heaters On (Noneditable)

Description:	A non editable value that indicates the total number of hours that the heaters have been on.
Value:	999,999 (using abbreviated convention described below)
Resolution:	1 hour
Default Value:	0
Format:	—
Use:	The right display indicates up to 9999 hours of heater operation. When the accumulated heater hours reaches 10,000, the display alternates every two seconds between the three left most digits (thousands) and the three right digits (hundreds). For example, 10,001 hours would be displayed as "10," for two seconds and then "001" for two seconds. The comma is present if parameter 20, <i>Temperature Units</i> , is set to degrees Fahrenheit. A period is present if parameter 20 is set to degrees Celsius.

2 Fault Log (Noneditable)

Description:	Stores a record of the last ten faults.
Value:	—
Resolution:	—
Default Value:	_F0 (unused log entry)
Format:	F1, F2, F3, and F4
Use:	Use the right-display scroll keys to review the log entries for the last ten faults. Empty log entries are indicated by "_F0." Refer to <i>Monitor the Melter</i> in Section 4, <i>Operation</i> .

3 Change History Log**(Noneditable)**

Description:	Records the last ten changes made to either the set-point temperatures or the operating parameters.
Value:	—
Resolution:	—
Default Value:	P- _ (unused log entry)
Format:	Refer to Section 3, <i>Installation. Review Parameter and Set-point Temperature Changes.</i>
Use:	Use the right-display key to review the log entries for the last ten changes that were made to the operating parameters or the set-point temperatures. Empty log entries are indicated by "P- _."

4 Ready Delay Time

Description:	The amount of time that will elapse after all of the components have reached their set-point temperature before the ready LED will turn on. The ready delay time only functions when the temperature of the tank, at the time the melter is turned on, is more than 27 °C (50 °F) from its set-point temperature. The ready delay time begins when all components are within 3 °C (5 °F) of their respective set-point temperature.
Value:	0 to 60 minutes
Resolution:	1 minute
Default Value:	0 minutes
Format:	Left display "rd". Right display, minutes or seconds remaining
Use:	The ready delay allows the contents of the tank an additional amount of time to heat before pump turns on. NOTE: The time remaining on the ready delay is indicated in minutes in the right display at the end of every automatic scan cycle. The left display indicates "rd" whenever the time remaining appears. When the delay time reaches 1 minute, the time remaining appears in seconds.

5 Service Interval Time

Description:	The number of heater-on hours that must elapse before the service LED turns on.
Value:	0 hours (disabled) to 8736 (one year)
Resolution:	1 hour
Default Value:	500 hours
Format:	—
Use:	Set the service interval time to signal a user-defined service check or maintenance event, such as changing the filter. The service LED will turn on after the pre-set time elapses. With the melter in the scan mode, press the Clear/Reset key to turn off the service LED and reset the time.

Standard *(contd)*

6

Service LED Heater Hours

(Noneditable)

Description:	A timer indicates how many more hours the heaters need to remain on before the service LED illuminates (service required).
Value:	0 hours (disabled) to 9999
Resolution:	1 hour
Default Value:	0
Format:	—
Use:	The service interval time (parameter 5) must be enabled before this parameter will work. Note: Heater hours accumulate whenever the heaters LED is illuminated.

8

Automatic Pump On

Description:	Determines if the pump will turn on automatically when the melter is ready.
Value:	0 = disabled or 1 = enabled
Resolution:	—
Default Value:	1 (enabled)
Format:	—
Use:	If Automatic Pump On is disabled, you must press the pump key to turn the pump on.

9

Automatic Pump On Temperature

Description:	Sets the temperature at which the pump will automatically turn on. CAUTION: Unnecessary starting of the pump before the hot melt is fully melted can lead to premature pump wear.
Value:	0° = The pump turns on when the ready LED turns on OR 1 °C to 230 °C (1 °F to 450 °F) = The pump turns on when the tank reaches the selected temperature.
Resolution:	1°
Default Value:	0°
Syntax:	—
Use:	Parameter is only used when parameter 8 is set to 1 (enabled). If a specific temperature value is used (as opposed to the default value of 0), only enter a set-point temperature that is lower than the set-point temperatures of the tank. A set-point temperature greater than the set-point of the tank will be ignored, and the pump will turn on when the melter is ready.

10 Enable or Disable the Melter Password

Description:	Activates or deactivates the melter password. When password protection is activated, component set-point temperatures or melter operating parameters cannot be changed until a valid password is entered using parameter 0.
Value:	0 (disabled) 1 (enabled)
Resolution:	—
Default Value:	0
Format:	—
Use:	A password must first be created using parameter 11 before it can be enabled or disabled using parameter 10.

11 Create Password

Description:	A user-defined password that prevents unauthorized changes to operating parameters or set-point temperatures.
Value:	0 to 9999
Resolution:	1
Default Value:	5000
Format:	—
Use:	Refer to Section 4, <i>Operation Enter the Melter Password</i> . NOTE: When the password is created and enabled, parameter 10 will not appear again in the right display until the password is entered.

14 External Communications Lock-out

Description:	Used as a safety feature when performing maintenance on the melter. Prevents external control of the melter through standard or optional inputs/outputs or network communications (optional)
Value:	0 (disabled) or 1 (enabled)
Resolution:	—
Default Value:	0 (disabled)
Format:	—
Use:	Set parameter to 1 (enabled) before performing any maintenance on the melter. When enabled, all external control of the melter stops until the parameter is once again set to 0 (disabled).

Standard *(contd)*

19 Auto Heaters On

Description:	Sets whether the heaters automatically come on or stay off at power up
Value:	0 (disabled) or 1 (enabled) Heaters automatically turn on at power up
Resolution:	—
Default Value:	1 (Heaters On)
Format:	—
Use:	If Automatic Heaters On is disabled, you must press the heaters key to turn the heaters on.

Temperature Control

20 Temperature Units

Description:	Sets the units for temperature display.
Value:	C (degrees Celsius) or F (degrees Fahrenheit)
Resolution:	1 degree
Default Value:	C
Format:	—
Use:	—

21 Over Temperature Delta

Description:	The number of degrees that the temperature of any component can increase over its assigned set-point temperature before an over temperature fault (F3) will occur.
Value:	5 °C (10 °F) to 60 °C (110 °F)
Resolution:	1°C 1°F
Default Value:	15 °C (25 °F)
Format:	—
Use:	—

22 Under Temperature Delta

Description:	The number of degrees that the temperature of any component can decrease from its set-point temperature before an under temperature fault (F2) occurs.
Value:	5 °C (10 °F) to 60 °C (110 °F)
Resolution:	1°C 1°F
Default Value:	25 °C (50 °F)
Format:	—
Use:	—

Temperature Control *(contd)*

23 Standby Delta

Description:	The number of degrees by which all heated components will be decreased when the melter is placed into the standby mode.
Value:	5°C to 190°C (10°F to 350°F)
Resolution:	1°C 1°F
Default Value:	50 °C (100 °F)
Format:	—
Use:	A standby delta should be selected that results in a balance between melter energy savings during periods of inactivity, the amount of time and energy required to bring the melter back up to set-point temperature, and a temperature at which the hot melt can be held in the tank for extended periods of time without charring. Refer to Section 4, <i>Operation, Using Melter Function Keys</i> . NOTE: The standby delta does not affect the under temperature delta (parameter 22).

24 Automatic Standby Timeout

Description:	The amount of time that must elapse after the last signal (applicator driver) is sent to input 1 before the melter will enter the standby mode. The automatic standby timeout feature saves energy by allowing the melter to automatically go into the standby mode if the melter detects that the applicators are no longer firing.
Value:	0 to 1440 minutes (24 hours)
Resolution:	1 minute
Default Value:	0 (disabled)
Format:	—
Use:	1. Change parameter 23 if required. 2. Set the control option for parameter 30 (input 1) to option 10 (automatic standby) NOTE: Only enable parameter 24 when a 24 VDC signal voltage is connected to input 1. If there is no voltage on the input contacts when the melter is ready, the melter will enter the standby mode after the automatic standby time.

25 Automatic Heaters Off Time

Description:	The amount of time that must elapse after the automatic standby time elapses (parameter 24) before the heaters turn off.
Value:	0 to 1440 minutes (24 hours)
Resolution:	1 minute
Default Value:	0 (disabled)
Format:	—
Use:	Set parameter 24 (automatic standby timeout) to the desired value before setting parameter 25.

26 Manual Standby Time

Description:	The amount of time that the melter will remain in the standby mode after the standby key is pressed.
Value:	0 to 180 minutes
Resolution:	1 minute
Default Value:	0
Format:	—
Use:	Set the standby time when you want the operator to be able to place the melter into the standby mode for a limited period of time (break, lunch, etc.). When manual standby is enabled (value greater than 0 minutes), the standby LED blinks. Set the standby delta (parameter 23) to the desired value before setting parameter 26. Note: When a time value equal to or greater than 1 minute is entered, the standby LED will flash to indicate that the manual standby timer is counting down.

27 Hose Standby Delta

Description:	The number of degrees by which all heated components will be decreased when the melter is placed into the standby mode.
Value:	5°C to 190°C (10°F to 350°F), 0
Resolution:	1°C 1°F
Default Value:	50 °C (100 °F)
Format:	—
Use:	A standby delta should be selected that results in a balance between melter energy savings during periods of inactivity, the amount of time and energy required to bring the melter back up to set-point temperature, and a temperature at which the hot melt can be held in the tank for extended periods of time without charring. Refer to Section 4, <i>Operation, Using Melter Function Keys</i>. NOTE: The standby delta does not affect the under temperature delta (parameter 22).

Temperature Control *(contd)*

28 Applicator Standby Delta

Description:	The number of degrees by which all heated components will be decreased when the melter is placed into the standby mode.
Value:	5°C to 190°C (10°F to 350°F), 0
Resolution:	1°C 1°F
Default Value:	50 °C (100 °F)
Format:	—
Use:	A standby delta should be selected that results in a balance between melter energy savings during periods of inactivity, the amount of time and energy required to bring the melter back up to set-point temperature, and a temperature at which the hot melt can be held in the tank for extended periods of time without charring. Refer to Section 4, <i>Operation, Using Melter Function Keys</i>. NOTE: The standby delta does not affect the under temperature delta (parameter 22).

Input Setup

30 Standard Input 1

Description:	Control options that determine the function of input 1.
Value:	0 – Input Disabled 1 – Standby On/Off 2 – Heaters On/Off 3 – Pump Enable/Disable 4 – Hose/Applicator 1 Enable/Disable 5 – Hose/Applicator 2 Enable/Disable 6 – Hose/Applicator 3 Enable/Disable 7 – Hose/Applicator 4 Enable/Disable 8 – Hose/Applicator 5 Enable/Disable 9 – Hose/Applicator 6 Enable/Disable 10 – <i>Automatic standby</i> 15 – Hose/Applicator 7 Enable/Disable (if present in system) 16 – Hose/Applicator 8 Enable/Disable (if present in system) 21 – Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 22 – Hose/Applicator 2 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 23 – Hose/Applicator 3 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 24 – Hose/Applicator 4 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 25 – Hose/Applicator 5 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 26 – Hose/Applicator 6 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 27 – Hose/Applicator 7 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 28 – Hose/Applicator 8 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
Resolution:	1
Default Value:	10
Format:	—
Use:	Multiple inputs can be set to the same input value. After one or more inputs that have the same input value are energized, the input functionality will not be considered inactive (off) until all of the inputs with the same input value are de-energized (Multiple inputs set to the same input value are logical ORed.).

Input Setup *(contd)*

31 Standard Input 2

Description:	Control options that determine the function of input 2.
Value:	0 – Input Disabled 1 – Standby On/Off 2 – Heaters On/Off 3 – Pump Enable/Disable 4 – Hose/Applicator 1 Enable/Disable 5 – Hose/Applicator 2 Enable/Disable 6 – Hose/Applicator 3 Enable/Disable 7 – Hose/Applicator 4 Enable/Disable 8 – Hose/Applicator 5 Enable/Disable 9 – Hose/Applicator 6 Enable/Disable 15 – Hose/Applicator 7 Enable/Disable (if present in system) 16 – Hose/Applicator 8 Enable/Disable (if present in system) 21 – Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 22 – Hose/Applicator 2 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 23 – Hose/Applicator 3 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 24 – Hose/Applicator 4 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 25 – Hose/Applicator 5 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 26 – Hose/Applicator 6 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 27 – Hose/Applicator 7 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 28 – Hose/Applicator 8 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
Resolution:	1
Default Value:	1
Format:	—
Use:	Multiple inputs can be set to the same input value. After one or more inputs that have the same input value are energized, the input functionality will not be considered inactive (off) until all of the inputs with the same input value are de-energized (Multiple inputs set to the same input value are logical ORed.).

32 Standard Input 3

Description:	Control options that determine the function of input 3.
Value:	0 – Input Disabled 1 – Standby On/Off 2 – Heaters On/Off 3 – Pump Enable/Disable 4 – Hose/Applicator 1 Enable/Disable 5 – Hose/Applicator 2 Enable/Disable 6 – Hose/Applicator 3 Enable/Disable 7 – Hose/Applicator 4 Enable/Disable 8 – Hose/Applicator 5 Enable/Disable 9 – Hose/Applicator 6 Enable/Disable 15 – Hose/Applicator 7 Enable/Disable (if present in system) 16 – Hose/Applicator 8 Enable/Disable (if present in system) 21 – Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 22 – Hose/Applicator 2 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 23 – Hose/Applicator 3 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 24 – Hose/Applicator 4 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 25 – Hose/Applicator 5 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 26 – Hose/Applicator 6 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 27 – Hose/Applicator 7 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 28 – Hose/Applicator 8 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
Resolution:	1
Default Value:	2
Format:	—
Use:	Multiple inputs can be set to the same input value. After one or more inputs that have the same input value are energized, the input functionality will not be considered inactive (off) until all of the inputs with the same input value are de-energized (Multiple inputs set to the same input value are logical ORed.).

Input Setup *(contd)*

33 Standard Input 4

Description: Control options that determine the function of input 4.

Value:

- 0 – Input Disabled
- 1 – Standby On/Off
- 2 – Heaters On/Off
- 3 – Pump Enable/Disable
- 4 – Hose/Applicator 1 Enable/Disable
- 5 – Hose/Applicator 2 Enable/Disable
- 6 – Hose/Applicator 3 Enable/Disable
- 7 – Hose/Applicator 4 Enable/Disable
- 8 – Hose/Applicator 5 Enable/Disable
- 9 – Hose/Applicator 6 Enable/Disable
- 15 – Hose/Applicator 7 Enable/Disable (if present in system)
- 16 – Hose/Applicator 8 Enable/Disable (if present in system)
- 21 – Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
- 22 – Hose/Applicator 2 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
- 23 – Hose/Applicator 3 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
- 24 – Hose/Applicator 4 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
- 25 – Hose/Applicator 5 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
- 26 – Hose/Applicator 6 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
- 27 – Hose/Applicator 7 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
- 28 – Hose/Applicator 8 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)

Resolution: 1

Default Value: 4

Format: —

Use: Multiple inputs can be set to the same input value. After one or more inputs that have the same input value are energized, the input functionality will not be considered inactive (off) until all of the inputs with the same input value are de-energized (Multiple inputs set to the same input value are logical ORed.).

34 – 37 Optional Inputs 5, 6, 7, and 8

Description:	Control options that determine the function of the six optional inputs provided when the optional I/O expansion card is installed on the CPU board.
Value:	0 – Input Disabled 1 – Standby On/Off 2 – Heaters On/Off 3 – Pump Enable/Disable 4 – Hose/Applicator 1 Enable/Disable 5 – Hose/Applicator 2 Enable/Disable 6 – Hose/Applicator 3 Enable/Disable 7 – Hose/Applicator 4 Enable/Disable 8 – Hose/Applicator 5 Enable/Disable 9 – Hose/Applicator 6 Enable/Disable 15 – Hose/Applicator 7 Enable/Disable (if present in system) 16 – Hose/Applicator 8 Enable/Disable (if present in system) 21 – Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 22 – Hose/Applicator 2 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 23 – Hose/Applicator 3 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 24 – Hose/Applicator 4 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 25 – Hose/Applicator 5 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 26 – Hose/Applicator 6 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 27 – Hose/Applicator 7 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 28 – Hose/Applicator 8 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 31 – Remote ATS recipes 1-15 (if present in system)
Resolution:	1
Default Value:	0 (disabled)
Format:	—
Use:	Multiple inputs can be set to the same input value. After one or more inputs that have the same input value are energized, the input functionality will not be considered inactive (off) until all of the inputs with the same input value are de-energized (Multiple inputs set to the same input value are logical ORed.). Can be used to remotely select ATS recipes 1-15. Control option 31 must be entered for parameters 34, 35, 36, and 37 (optional inputs 5-8) for ATS remote recipe recall. Optional input 5 = LSB; optional input 8 = MSB. ATS remote recipe recall is disabled when optional inputs 5-8 are deenergized.

38 – 39 Optional Inputs 9 and 10

Description:	Control options that determine the function of the six optional inputs provided when the optional I/O expansion card is installed on the CPU board.
Value:	0 – Input Disabled 1 – Standby On/Off 2 – Heaters On/Off 3 – Pump Enable/Disable 4 – Hose/Applicator 1 Enable/Disable 5 – Hose/Applicator 2 Enable/Disable 6 – Hose/Applicator 3 Enable/Disable 7 – Hose/Applicator 4 Enable/Disable 8 – Hose/Applicator 5 Enable/Disable 9 – Hose/Applicator 6 Enable/Disable 15 – Hose/Applicator 7 Enable/Disable (if present in system) 16 – Hose/Applicator 8 Enable/Disable (if present in system) 21 – Hose/Applicator 1 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 22 – Hose/Applicator 2 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 23 – Hose/Applicator 3 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 24 – Hose/Applicator 4 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 25 – Hose/Applicator 5 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 26 – Hose/Applicator 6 Standby On/Off (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 27 – Hose/Applicator 7 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1) 28 – Hose/Applicator 8 Standby On/Off (if present in system) (provides ability for only a single hose/applicator channel to be placed in standby, and not the entire system as with value option 1)
Resolution:	1
Default Value:	0 (disabled)
Format:	—
Use:	Multiple inputs can be set to the same input value. After one or more inputs that have the same input value are energized, the input functionality will not be considered inactive (off) until all of the inputs with the same input value are de-energized (Multiple inputs set to the same input value are logical ORed.).

Output Setup

40 - 42

Standard Outputs 1, 2, and 3

Description:	Determines the function of the output.
Value:	0 = Output Disabled 1 = Ready 2 = Ready and Pump is on 3 = Fault 4 = Low level 5 = Service LED is on 6 = Alert (Potential fault) 9 = Heaters on 10 = Standby on
Resolution:	1
Default Value:	Output 1 = 1 Output 2 = 3 Output 3 = 4
Format:	—
Use:	Refer to <i>Installing Melter Outputs</i> in Section 3, <i>Installation</i>, for information on setting up outputs. When control option 6, <i>Alert</i> is selected, the output is active whenever the melter enters the two minute fault monitoring period. If the potential fault condition clears before the end of the two minute period, the output signal ends. Refer to Section 4, <i>Operation, Monitor Melter Faults</i>, for information about fault monitoring. To change the output state on a ProBlue melter: 1. Select the parameter representing the output (40–42). 2. Press both the up and down right display scroll keys simultaneously. 3. If done correctly, a negative sign should appear to the left of the chosen parameter.

43 - 46**Optional Outputs 4, 5, 6, and 7**

Description:	Control options that determine the function of the four optional outputs provided when the optional I/O expansion card is installed on the CPU board.
Value:	0 = Output Disabled 1 = Ready 2 = Ready and Pump is on 3 = Fault 4 = Low level 5 = Service LED is on 6 = Alert (Potential fault) 9 = Heaters on 10 = Standby on
Resolution:	1
Default Value:	0 (all optional outputs)
Format:	—
Use:	Refer to the instruction sheet provided with the optional I/O expansion card for information about wiring and setting up the optional outputs. When control option 6, <i>Alert</i> is selected, the output is active whenever the melter enters the two minute fault monitoring period. If the potential fault condition clears before the end of the two minute period, the output signal ends. Refer to Section 4, <i>Operation, Monitor Melter Faults</i>, for information about fault monitoring. To change the output state on a ProBlue melter: 1. Select the parameter representing the output (40–42). 2. Press both the up and down right display scroll keys simultaneously. 3. If done correctly, a negative sign should appear to the left of the chosen parameter.

Seven-day Clock

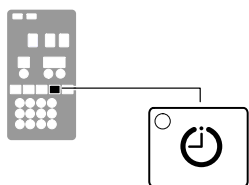
Before setting up the clock, refer to *Using Melter Function Keys* in Section 4, *Operation*, to familiarize yourself with the function and use of the clock feature.

If you are unfamiliar with the procedure for accessing and editing operating parameters, refer to Section 3, *Installation, Setting Up the Melter*.

To set the clock

Refer to the examples on the next page.

1. Use parameter 50 to select the current day of the week.
2. Use parameter 51 to set the current time of day.
3. Create schedule 1 by:
 - a. Setting parameters 55 and 56 to the time of the day that the heaters should turn on and off.
 - b. Setting parameters 57 and 58 to the time of the day that the melter should enter and exit the standby mode.
4. Using parameters 60 through 68, create schedules 2 and 3 by repeating step 3.
5. Use parameters 71 through 77 to assign which of the four schedules should be used on each day of the week. Up to three schedules may be assigned each day (to support three work shifts). Each of the eight control options (0 to 7) that is available in parameters 71 through 77 assigns a different combination of the three schedules. Option 0 is used hold the melter in the state dictated by the last clock transition until the next clock transition occurs.
6. Press the **Clock** key.



Seven-day clock key



In order for the clock to operate continuously throughout the week, a valid schedule must be assigned to every day of the week (parameters 71 through 77).

To prevent unintentional activation of the clock the default setting for parameters 71 through 77 is schedule 0, which has no time values assigned to it. With the default set to schedule 0, unintentionally pressing the clock key will have no effect on the melter.

Example 1

To turn the heaters on at 0600 and turn them off at 0015 every day of the week:

Par 55 = 0600
Par 56 = 0015
Par 60 = - - - -
Par 61 = - - - -
Par 71 through 77 = 1

Example 2

To turn the heaters on at 0700 and off at 1700 Monday through Friday, and turn the heaters off Saturday and Sunday:

Par 55 = 0700
Par 56 = 1700
Par 57 = - - - -
Par 58 = - - - -
Par 71 through 75 = 1
Par 76 and 77 = 0

Example 3

To turn the heaters on at 0600 each morning, go into standby for lunch at 1130, come out of standby after lunch at 1230, and turn the heaters off at 1600 at the end of the day, every day of the week:

Par 50 = 1
Par 51 = *current time*
Par 55 = 0600
Par 56 = 1600
Par 57 = 1130
Par 58 = 1230
Par 71 through 75 = 1
Par 76 and 77 = 1

Seven-day Clock *(contd)*

50 Current Day

Description:	Used to set the current day of the week.
Value:	1 to 7 (1 = Monday, 2 = Tuesday, etc.)
Resolution:	1
Default Value:	—
Format:	—
Use:	Refer to Section 4, <i>Operation, Using Melter Function Keys</i> , for information about the use and affects of the seven-day clock feature.

51 Current Hour

Description:	Used to set the local time of the day.
Value:	0000 to 2359 (European time format)
Resolution:	1 minute
Default Value:	(Time set at factory)
Format:	<i>Hours, Hour: Minute, Minute</i>
Use:	This setting only needs to be made once for all daily schedules

55 Schedule 1 Heaters On

Description:	Used to set the time that the clock will turn on the heaters during schedule 1.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	0600
Format:	<i>Hours, Hour: Minute, Minute</i>
Use:	Set the desired time for the heaters to turn on. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys.

56 Schedule 1 Heaters Off

Description:	Used to set the time that the clock will turn off the heaters during schedule 1.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	1700
Format:	<i>Hours, Hour: Minute, Minute</i>
Use:	Set the desired time for the heaters to turn off. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys.

57 **Schedule 1 Enter Standby**

Description:	Used to set the time that the melter will enter the standby mode during schedule 1.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hour, Hour: Minute, Minute</i>
Use:	Set the time that the melter will enter the standby mode during schedule 1. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys. Note: Do not set an enter standby time that is outside of the time period defined by the schedule's heater on and off time. The melter cannot enter the standby mode when the heaters are off.

58 **Schedule 1 Exit Standby**

Description:	Used to set the time that the melter will exit the standby mode during schedule 1.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hour, Hour: Minute, Minute</i>
Use:	Set the time that the melter will exit the standby mode during schedule 1. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys. Note: Do not set an exit standby time that is outside of the time period defined by the schedule's heater on and off time. The melter cannot enter the standby mode when the heaters are off.

60 **Schedule 2 Heaters On**

Description:	Used to set the time that the clock will turn on the heaters during schedule 2.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hours, Hour: Minute, Minute</i>
Use:	Set the desired time for the heaters to turn on. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys.

Seven-day Clock *(contd)*

61 Schedule 2 Heaters Off

Description:	Used to set the time that the clock will turn off the heaters during schedule 2.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hours, Hour: Minute, Minute</i>
Use:	Set the desired time for the heaters to turn off. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys.

62 Schedule 2 Enter Standby

Description:	Used to set the time that the melter will enter the standby mode during schedule 2.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hour, Hour: Minute, Minute</i>
Use:	Set the time that the melter will enter the standby mode during schedule 2. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys. Note: Do not set an enter standby time that is outside of the time period defined by the schedule's heater on and off time. The melter cannot enter the standby mode when the heaters are off.

63 Schedule 2 Exit Standby

Description:	Used to set the time that the melter will exit the standby mode during schedule 2.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hour, Hour: Minute, Minute</i>
Use:	Set the time that the melter will exit the standby mode during schedule 2. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys. Note: Do not set an exit standby time that is outside of the time period defined by the schedule's heater on and off time. The melter cannot enter the standby mode when the heaters are off.

65 Schedule 3 Heaters On

Description:	Used to set the time that the clock will turn on the heaters during schedule 3.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hours, Hour: Minute, Minute</i>
Use:	Set the desired time for the heaters to turn on. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys.

66 Schedule 3 Heaters Off

Description:	Used to set the time that the clock will turn off the heaters during schedule 3.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hours, Hour: Minute, Minute</i>
Use:	Set the desired time for the heaters to turn off. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys.

67 Schedule 3 Enter Standby

Description:	Used to set the time that the melter will enter the standby mode during schedule 3.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hour, Hour: Minute, Minute</i>
Use:	Set the time that the melter will enter the standby mode during schedule 3. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys. Note: Do not set an enter standby time that is outside of the time period defined by the schedule's heater on and off time. The melter cannot enter the standby mode when the heaters are off.

Seven-day Clock *(contd)*

68 Schedule 3 Exit Standby

Description:	Used to set the time that the melter will exit the standby mode during schedule 3.
Value:	0000 to 2359, - - - -
Resolution:	1 minute
Default Value:	- - - -
Format:	<i>Hour, Hour: Minute, Minute</i>
Use:	Set the time that the melter will exit the standby mode during schedule 3. To disable this parameter, set the parameter's value to "- - - -" by simultaneously pressing both of the right-display scroll keys. Note: Do not set an exit standby time that is outside of the time period defined by the schedule's heater on and off time. The melter cannot enter the standby mode when the heaters are off.

71 Schedules for Monday

Description:	Used to select which schedule(s) should be used on Monday.
Value:	0 – Remain at last clock transition 1 – Use just schedule 1 2 – Use just schedule 2 3 – Use just schedule 3 4 – Use schedule 1 and 2 5 – Use schedule 2 and 3 6 – Use schedule 1 and 3 7 – Use schedule 1, 2, and 3
Resolution:	1
Default Value:	0
Format:	—
Use:	Selects the active schedule(s) for the day. NOTE: If the 0 schedule option is used, the heaters will not turn on again until the next scheduled heaters on time arrives.

72 Schedules for Tuesday

Description:	Used to select which schedule(s) should be used on Tuesday.
Value:	0 – Remain at last clock transition 1 – Use just schedule 1 2 – Use just schedule 2 3 – Use just schedule 3 4 – Use schedule 1 and 2 5 – Use schedule 2 and 3 6 – Use schedule 1 and 3 7 – Use schedule 1, 2, and 3
Resolution:	1
Default Value:	0
Format:	—
Use:	Selects the active schedule(s) for the day. NOTE: If the 0 schedule option is used, the heaters will not turn on again until the next scheduled heaters on time arrives.

73 Schedules for Wednesday

Description:	Used to select which schedule(s) should be used on Wednesday.
Value:	0 – Remain at last clock transition 1 – Use just schedule 1 2 – Use just schedule 2 3 – Use just schedule 3 4 – Use schedule 1 and 2 5 – Use schedule 2 and 3 6 – Use schedule 1 and 3 7 – Use schedule 1, 2, and 3
Resolution:	1
Default Value:	0
Format:	—
Use:	Selects the active schedule(s) for the day. NOTE: If the 0 schedule option is used, the heaters will not turn on again until the next scheduled heaters on time arrives.

Seven-day Clock *(contd)*

74 Schedules for Thursday

Description:	Used to select which schedule(s) should be used on Thursday.
Value:	0 – Remain at last clock transition 1 – Use just schedule 1 2 – Use just schedule 2 3 – Use just schedule 3 4 – Use schedule 1 and 2 5 – Use schedule 2 and 3 6 – Use schedule 1 and 3 7 – Use schedule 1, 2, and 3
Resolution:	1
Default Value:	0
Format:	—
Use:	Selects the active schedule(s) for the day. NOTE: If the 0 schedule option is used, the heaters will not turn on again until the next scheduled heaters on time arrives.

75 Schedules for Friday

Description:	Used to select which schedule(s) should be used on Friday.
Value:	0 – Remain at last clock transition 1 – Use just schedule 1 2 – Use just schedule 2 3 – Use just schedule 3 4 – Use schedule 1 and 2 5 – Use schedule 2 and 3 6 – Use schedule 1 and 3 7 – Use schedule 1, 2, and 3
Resolution:	1
Default Value:	0
Format:	—
Use:	Selects the active schedule(s) for the day. NOTE: If the 0 schedule option is used, the heaters will not turn on again until the next scheduled heaters on time arrives.

76 Schedules for Saturday

Description:	Used to select which schedule(s) should be used on Saturday.
Value:	0 – Remain at last clock transition 1 – Use just schedule 1 2 – Use just schedule 2 3 – Use just schedule 3 4 – Use schedule 1 and 2 5 – Use schedule 2 and 3 6 – Use schedule 1 and 3 7 – Use schedule 1, 2, and 3
Resolution:	1
Default Value:	0
Format:	—
Use:	Selects the active schedule(s) for the day. NOTE: If the 0 schedule option is used, the heaters will not turn on again until the next scheduled heaters on time arrives.

77 Schedules for Sunday

Description:	Used to select which schedule(s) should be used on Sunday.
Value:	0 – Remain at last clock transition 1 – Use just schedule 1 2 – Use just schedule 2 3 – Use just schedule 3 4 – Use schedule 1 and 2 5 – Use schedule 2 and 3 6 – Use schedule 1 and 3 7 – Use schedule 1, 2, and 3
Resolution:	1
Default Value:	0
Format:	—
Use:	Selects the active schedule(s) for the day. NOTE: If the 0 schedule option is used, the heaters will not turn on again until the next scheduled heaters on time arrives.

Appendix C

Melter Communications

This appendix describes the installation and use of the Nordson Configuration Manager (NCM) communications utility. With this utility you can:

- transfer operating parameters and temperature set-points between melters
- upgrade or reload your melter's firmware

Software Availability

If you do not already have the NCM utility, you can download it from the internet by navigating to www.enordson.com/support.

If you do not have a connection to the internet, you can request a software CD from your Nordson representative.

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Appendix D

Double-Acting Pump Diagnostics and Repair



WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

Introduction

This appendix provides comprehensive diagnostic and repair information for the double-acting pump used in ProBlue adhesive melters. Before using the information provided in this appendix to diagnose or repair your pump, ensure that you have eliminated all conditions that might otherwise be mistaken for a failure of the pump. Refer to Section 6, *Troubleshooting*.

Pump Function

The pump is double-acting—material is discharged from the pump during both the upward and downward stroke of the piston.

The pump consists of an air section and a hydraulic section. Air is supplied to the pump through an air filter and a regulator. From the regulator, air flows to an air valve inside the air section. The air valve directs air into either the upper or lower portion of the air cylinder, which forces the piston assembly up or down. The lower end of the piston assembly contains a pressure ball valve. At the bottom of the hydraulic section is a siphon ball valve.

When the air valve directs the stroke of the piston upwards, the piston creates suction within the pump body, which opens the siphon ball valve and closes the pressure ball valve. As the piston moves upwards, material is simultaneously drawn into the pump below the pressure ball valve and forced out of the pump chamber above the pressure ball valve. Material leaving the pump chamber passes through a filter and then into a manifold, where it is distributed to the hoses/applicators.

Pump Function *(contd)*

Attached to the piston assembly is a shifter fork. The fork travels along the shaft of the actuator assembly that has a magnet at both ends. When the stroke of the piston carries the shifter fork upwards, a magnet in the shifter fork attracts the magnet at the end of the actuator, which shifts the position of the air valve. When the valve shifts, air is redirected to the opposite side of the air cylinder, which forces the piston downwards.

On the piston downward stroke, material pressure below the piston closes the siphon ball valve and opens the pressure ball valve. As the piston moves downwards, material below the pressure ball valve is displaced, and forced through the pressure ball valve and out of the pump chamber, where again, it passes through the filter and into the manifold.

Pump Isolation Valve

To prevent siphoning of the tank when the pump is removed from the manifold, the manifold is equipped with an isolation valve.

Pressure Discharge Valve

The manifold is equipped with a pressure discharge valve. When the pump is switched off at the control panel, air is removed from the top of the valve causing it to open. When the valve opens, pressurized material within the pump and manifold is bypassed through the pressure discharge valve back to the tank.

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Pump Diagnostics

To determine why the pump has failed, you will, in most cases, have to partially or fully disassemble the pump. To assist you in determining the appropriate level of disassembly, Table D-1 provides a logical breakdown of the three types of pump failures, the potential conditions that could produce each failure, and the disassembly procedure(s) in which potential condition(s) can be examined.

Disassembly procedures are provided in *Pump Disassembly and Reassembly*.

Table D-1 Pump Diagnostics

Problem	Possible Cause	Corrective Action
1. Pump not Stroking	Air valve dirty or damaged	<i>Remove the Valve Spool and Sleeve</i>
	Valve sleeve O-rings damaged or deteriorated	<i>Remove the Valve Spool and Sleeve</i>
	Air leaking from between the cylinder head and the air cylinder or between the air cylinder and the pump frame	<i>Remove The Actuator and the Air Cylinder Assembly</i>
	Piston cups damaged	<i>Remove the Piston Cups</i>
	Shifter fork damaged, slipped out of position on piston, installed upside down, or magnets loose	<i>Removing the Shifter Fork</i>
	Magnets on actuator assembly loose	<i>Remove the Magnetic Actuator Assembly</i>
	Piston damaged or has char buildup	<i>Remove the Lower Ball Seat Assembly and the Piston</i>
2. Pump Leaking Adhesive	O-ring and/or pump seal deteriorated or damaged	<i>Remove the Pump O-ring and the Pump Seal</i>
	O-rings on cross-over tubes or between the pump and manifold damaged or deteriorated	<i>Removing the Pump from the Melter</i>
3. Pump Strokes Erratically	Siphon ball, seat and/or cage is damaged, deteriorated, or has char buildup	<i>Disassemble the Lower Ball Seat and Pressure Ball Assemblies</i>
	Pressure ball and/or seat has char buildup or is scratched or pitted	<i>Disassemble the Lower Ball Seat and Pressure Ball Assemblies</i>
	Piston has char buildup	<i>Remove the Lower Ball Seat Assembly and the Piston</i>
	Pump body dirty	<i>Remove the Lower Ball Seat Assembly and the Piston</i>

Pump Disassembly and Reassembly

This part provides sequential pump disassembly procedures. Unless otherwise noted in the *Special Reassembly Instructions*, which are provided in each procedure, reassembly of the pump is the reverse of the disassembly.

Within each disassembly procedure, is a check/repair table that describes what specific conditions (from Table D-1) to inspect for while disassembling the pump, service details, and component part numbers.

Melter Preparation

The melter must be brought up to operating temperature before the pump can be removed and disassembled. Once the pump is removed, the molten material within the pump will remain workable only for a short period of time. If necessary, use a heat applicator to warm the pump assembly during disassembly.

Required Tools and Materials

Tools

- Heat applicator
- 4-mm hex wrench
- 5-mm hex wrench
- 6-mm hex wrench
- 1/8-in. steel rod or equivalent tool
- 8 mm open-end wrench
- 10 mm socket and ratchet
- Bench vise or suitable mount to hold the pump during repairs
- Suitable vessel to heat Type-R fluid



WARNING! Do not heat Type R fluid with an open flame or in an unregulated heating device. Do not heat Type R fluid above 246 °C (475 °F).

Service Parts

In most cases, you will need the pump service kit P/N 1028304 to complete pump repairs. This kit contains all of the seals, O-rings, and other parts that are necessary to service the pump. Refer to the *Parts* at the end of this appendix for a complete listing of the service kit and the pump assembly parts.

Supplies

The following table described the lubricants and other compounds that are required during the re-assembly of the pump. Lubricants and other compounds are indicated in the illustrations by the symbols shown in Table D-2.

Table D-2 Lubricants and Compounds

Description	Part Number	Symbol
Never-Seez™	900344	
Parker™ Hi-Temp Lubricant	1029063	
Loctite 272™ Threadlocking Adhesive	900470	
SP Lubricating Oil	211228	
Type-R Fluid (1 gal)	270755	--

Remove the Pump from the Melter

1. Relieve system pressure. Refer to *Relieving System Pressure* in Section 5.

See Figure D-1.

2. Isolate the pump from the manifold by rotating the isolation valve handle to its full vertical position (valve closed).
3. Remove the three M8 pump-mounting bolts from the front of the pump body.
4. Rotate the top of the pump slightly toward the front of the melter while pulling the pump away from the manifold.

NOTE: The face of the pump body contains two M6 threaded holes. Bolts can be threaded into these holes to gain leverage when removing the pump.

5. Remove the air line from the back of the pump.
6. Lift the pump clear of the melter, and place it in a bench vise or other suitable mount.

Check/Repair		
Pump-to-manifold O-rings P/N 1019515 P/N 942111	Inspect for nicks, gouging, or swelling	Apply Parker lubricant during reassembly
Cross-over tube O-rings P/N 940133 (2) PTFE back-up ring P/N 954013	Inspect for nicks, gouging, or swelling	Apply Parker lubricant during reassembly

Special Reassembly Instructions

- Before reinstalling the pump, lubricate the O-rings on the cross-over tubes and the two O-rings between the pump and the manifold.

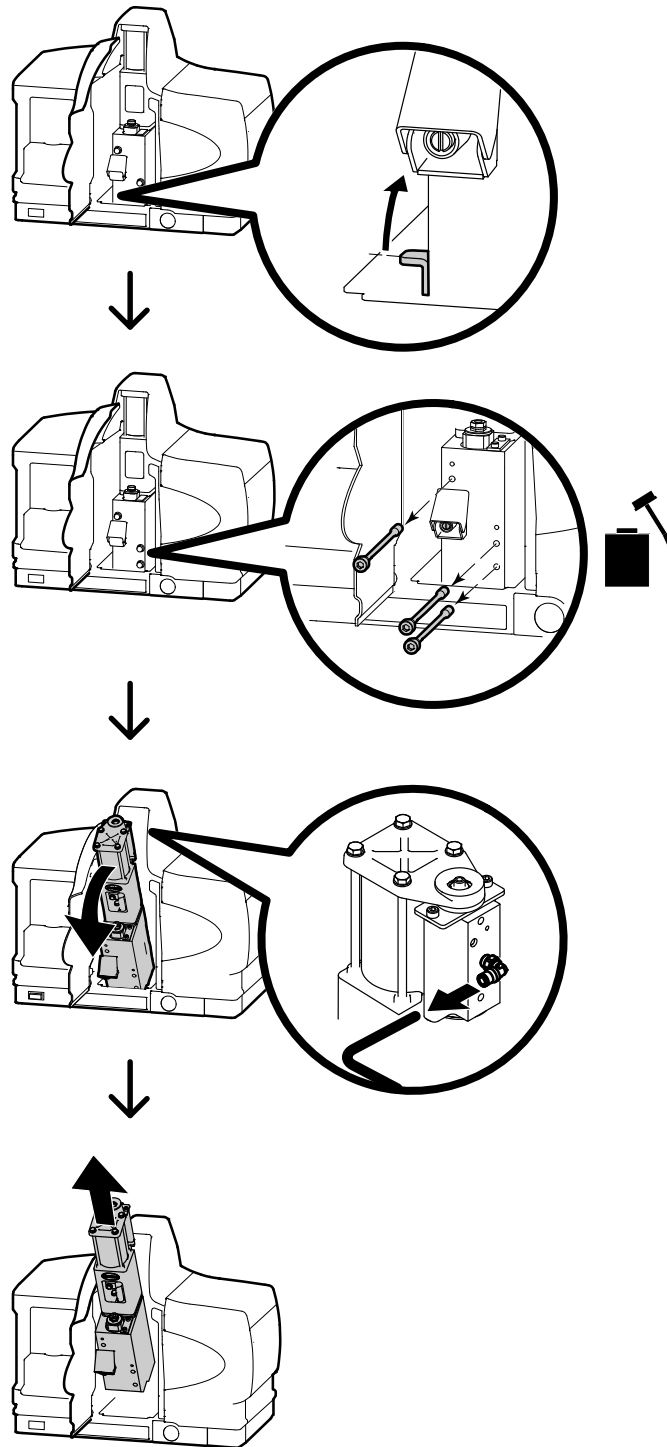


Figure D-1 Removing the pump

Remove the Actuator and Air Manifold and the Cylinder Assembly

See Figure D-2.

1. Remove the four M6 screws (1) and washers (2) from the cylinder head (3), and then separate the cylinder head from the cylinder (4).
2. Lift the cylinder off of the piston cups (7), and then rotate the cylinder/can assembly (4 and 5) away from the shifter fork assembly (6).
3. Remove the two O-rings (8).

Check/Repair		
O-rings P/N 940332	Inspect for nicks, gouging, or swelling	Apply Parker lubricant during reassembly

Special Reassembly Instructions

- Slide the cylinder over the half of the piston cup assembly (Which was installed as described in *Removing the Piston Cup Assembly, Special Reassembly Instructions*); and then remove the torque nut, assemble the remaining piston cup (cupped side facing up) and seal washer, and then replace the torque nut.
- Before rotating the cylinder/can assembly onto the shifter fork, center the fork inside the pump frame.

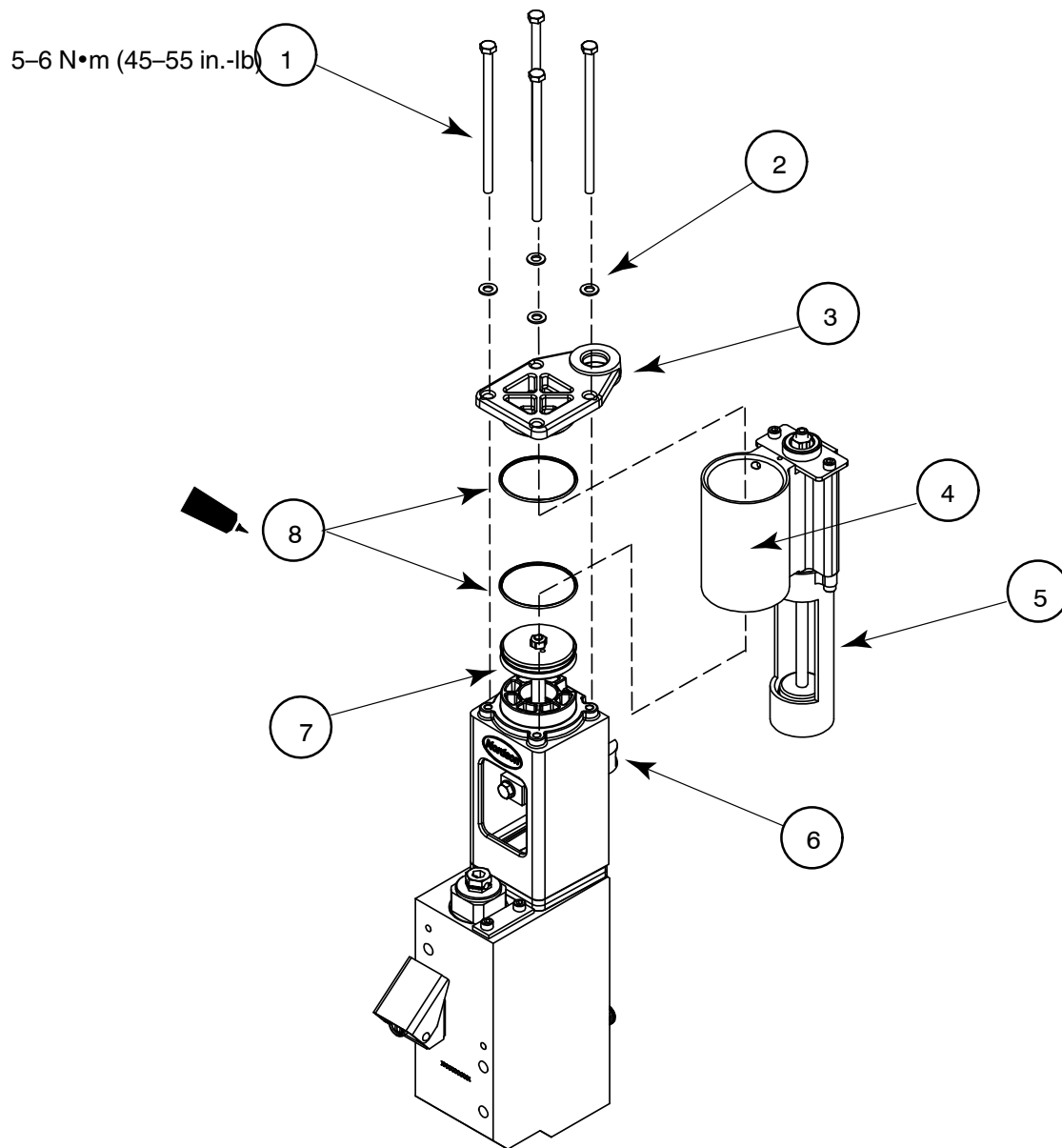


Figure D-2

- | | |
|------------------|----------------------------|
| 1. M6 screw (4) | 4. Cylinder |
| 2. M6 washer (4) | 5. Can |
| 3. Cylinder head | 6. Shifter fork assembly |
| | 7. Piston cup/seal washers |
| | 8. O-rings (2) |

Remove the Magnetic Actuator Assembly

See Figure D-3.

1. Remove the two M5 screws (3), and then pull the can (2) off of the actuator assembly (1).

See Figure D-4.

2. Pull the actuator assembly away from the upper detent (4) to expose the small tool hole in the shaft (3).
3. Place a $\frac{1}{8}$ -in. steel rod or similar tool into the tool hole to prevent the actuator from rotating.
4. With the actuator assembly held in position with the $\frac{1}{8}$ -in. steel rod/tool, remove the valve spool nut (1), and then remove the bumper assembly (2).

See Figure D-5.

5. While holding the valve spool by the wrench flats (1) to prevent the spool from rotating, unscrew the actuator assembly (2).

Check/Repair		
Magnetic Actuator P/N 164606	Magnets are secured to the actuator shaft, undamaged, and free of debris	Clean, tighten the magnets, or replace as needed
Bumper assembly P/N 1014650	Check for wear	Replace if worn

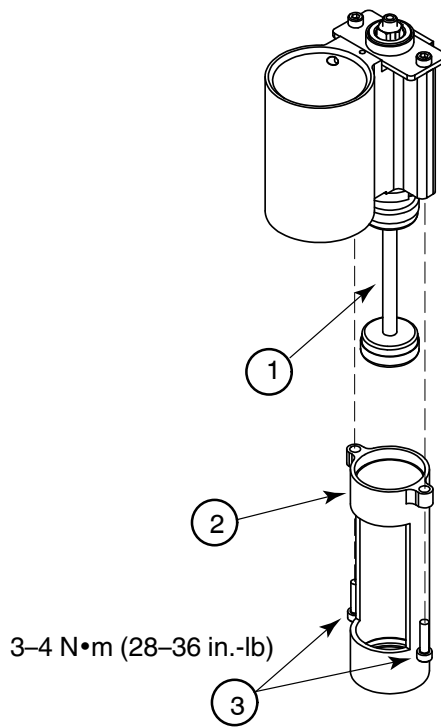


Figure D-3

- | | |
|----------------------|-----------------|
| 1. Actuator assembly | 3. M5 screw (2) |
| 2. Can | |

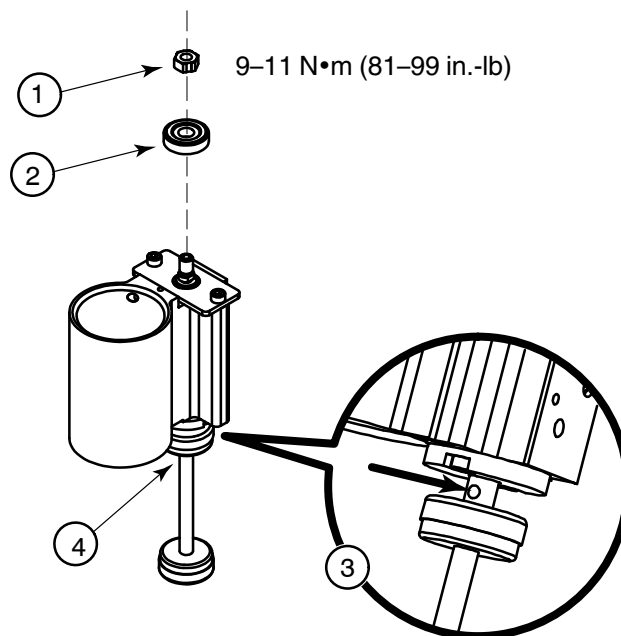


Figure D-4

- | | |
|--------------------|-----------------|
| 1. Valve spool nut | 3. Tool hole |
| 2. Bumper assembly | 4. Upper detent |

Remove the Magnetic Actuator Assembly (contd)

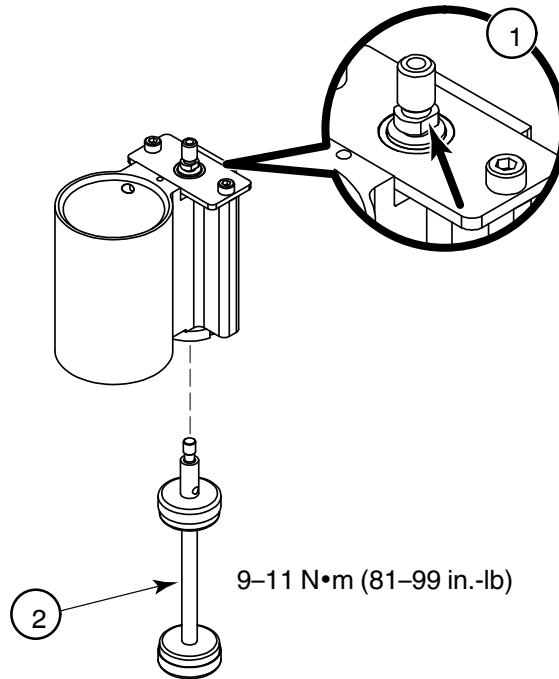


Figure D-5

1. Wrench flats
2. Actuator assembly

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Remove the Valve Spool and Sleeve

CAUTION: Handle the valve spool with care. Damaging the precision machined surface of the spool can cause the air valve to seize.

See Figure D-6.

1. Carefully slide the valve spool (1) out of the valve sleeve (2). Set the valve spool aside onto a clean cloth.

See Figure D-7.

2. Remove the two M4 screws (5), and then separate the upper detent (6) and spring (4) from the air manifold (3).
3. Remove the two M5 screws (2), and then remove the flange (1).

See Figure D-8.

4. Use a socket or similar object to push the valve sleeve out of the air manifold.

NOTE: The valve spool and sleeve are a matched set and cannot be exchanged with parts from another air valve assembly. If either the spool or sleeve is damaged, they must be replaced with a new valve assembly.

CAUTION! Do not scrape the valve spool or sleeve. Clean them with mineral spirits or any non-chlorinated cleaning solvent and a soft cloth. Do not use abrasives such as sandpaper or emery cloth. Be careful not to round off the sharp edges of the spool lands.

Check/Repair		
Valve spool*	Spool lands are nicked, gouged, corroded, or dirty	Clean with mineral spirits or any non-chlorinated solvent and a soft cloth. Apply SP lubricating oil to the lands before inserting the spool back into the sleeve
Valve sleeve*	Broken, corroded, or dirty	Clean with mineral spirits or any non-chlorinated solvent and a soft cloth
O-rings P/N 940181	Inspect for nicked, gouged, or swollen	Apply Parker lubricant during reassembly

*Available only as part of valve assembly P/N 1006027

Special Reassembly Instructions

- Use the flange to press the sleeve back into the air manifold.
- Apply only one drop of lubricating oil to each spool land.
- Ensure that the valve spool slides freely inside the sleeve.

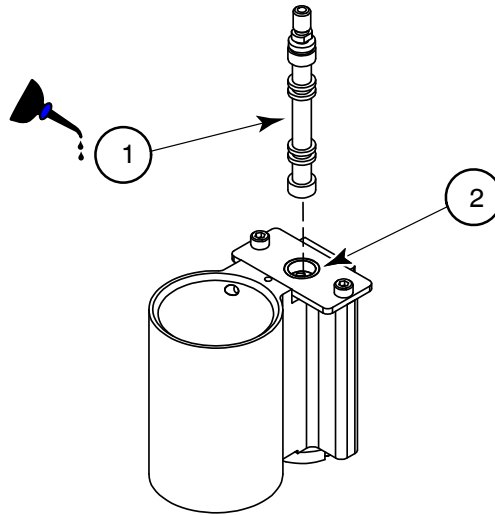


Figure D-6

1. Spool lands
2. Valve sleeve

Special Reassembly Instructions (contd)

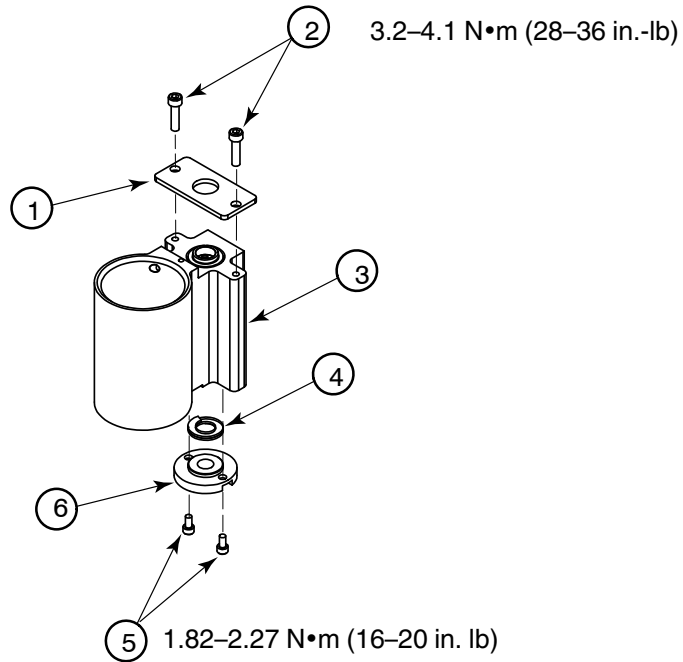


Figure D-7

- | | |
|------------------|-----------------|
| 1. Flange | 4. Spring |
| 2. M5 screws (2) | 5. M4 screws |
| 3. Air manifold | 6. Upper detent |

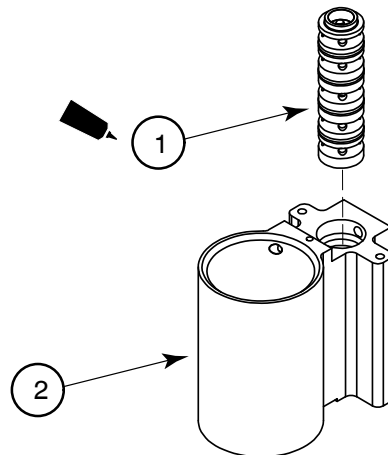


Figure D-8

- | |
|-----------------|
| 1. Valve sleeve |
| 2. Air manifold |

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Remove the Shifter Fork

CAUTION! Handle the shifter fork with care. Dropping or otherwise mishandling the shifter fork may damage the magnet.

See Figure D-9.

1. Remove the hex-head screw (2) and the washer (1) from the shifter fork (3).
2. Remove the shifter fork from the piston by sliding the fork up to the narrowest point on the piston.

Check/Repair		
Shifter fork assembly P/N 166880	Word "UP" is facing upwards Securely attached to piston Resting on piston shoulder Bent Magnets secure/undamaged	Replace fork if bent or magnet is damaged

Special Reassembly Instructions

- The fork must be resting on the shoulder of the piston (See Figure D-9, item 4).
- The word "UP" must be facing the top of the pump frame.

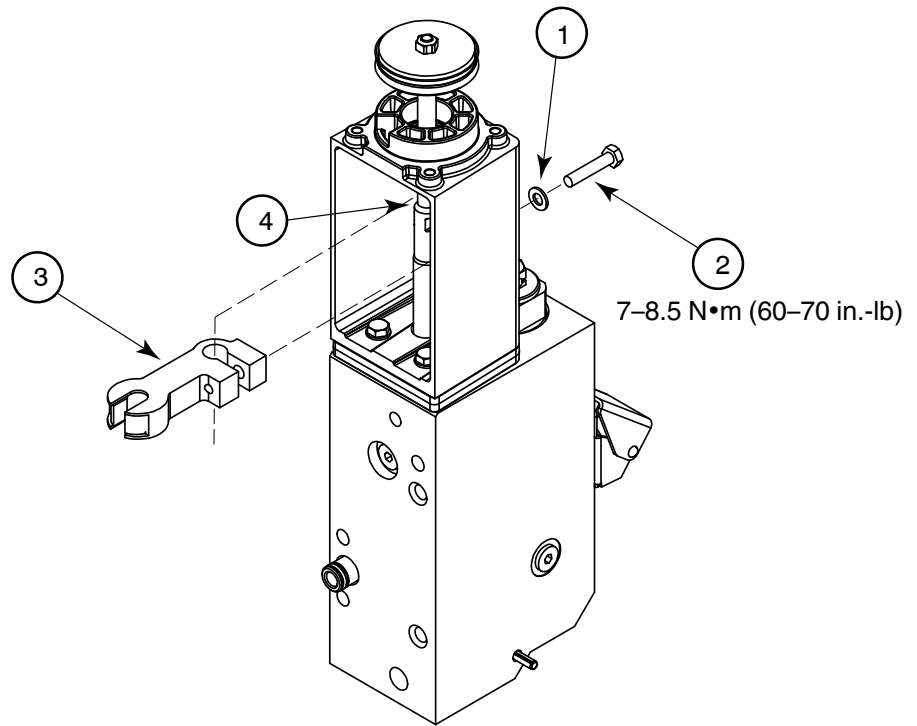


Figure D-9

- | | |
|-------------------|--------------------------|
| 1. Washer | 3. Shifter fork assembly |
| 2. Hex-head screw | 4. Piston shoulder |

Remove the Piston Cups

See Figure D-10.

1. While holding the piston in-place by its wrench flats, remove the M6 torque nut (1).
2. Remove the two piston cups (4) and the piston seal washers (2 and 3).

Check/Repair		
Piston cups P/N 163039	Not torn or deteriorated Pliable	Apply Parker lubricant during reassembly

Special Reassembly Instructions

- To prevent damage to the upper piston cup when reinstalling the cylinder, install only the bottom seal washer, the bottom piston cup, center seal washer, and the torque nut (loose). The remaining piston cup and washer are not installed until after the cylinder is in-place.

Refer to *Remove the Actuator and Air Manifold and the Cylinder Assembly*.

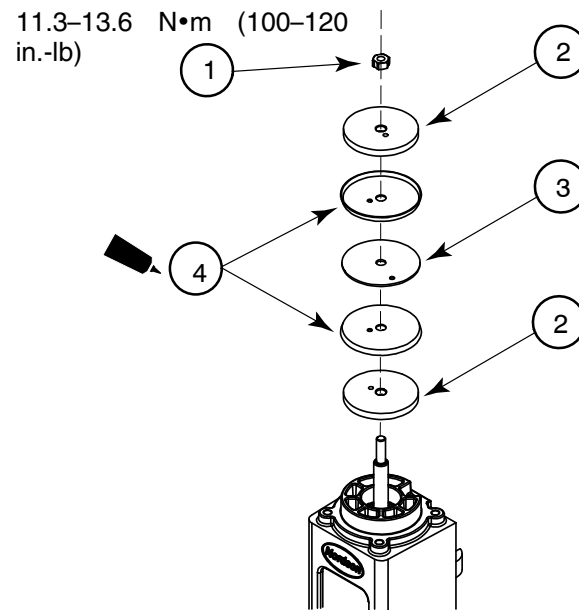


Figure D-10

- | | |
|--------------------------|-----------------------|
| 1. Torque nut | 3. Piston seal washer |
| 2. Piston cup washer (2) | 4. Piston cup (2) |

Remove the Pump Frame and the Insulator

See Figure D-11.

1. Remove the four hex-head screws (1) and washers (4).
2. Lift the pump frame (2) and the insulator (3) off of the piston.

See Figure D-12.

3. If necessary (see Checks/Repairs), remove the retaining ring (1) and the U-cup (2) from the frame.

Check/Repair		
Pump insulator P/N 1017307	Cracked or warped	
U-cup piston seal P/N 952100	Nicked, cut, or deteriorated	Apply Parker lubricant during reassembly

Special Reassembly Instructions

- Before reinstalling the insulator and pump frame, place the O-ring and piston seal over the piston.

NOTE: Install the pump seal with the open side facing the pump body.

- Install the insulator with the words “This side up” facing upwards.
- Use the insulator to seat the O-ring and pump seal into the groove in the pump body.
- The tapered end of the insulator and pump frame face the filter.

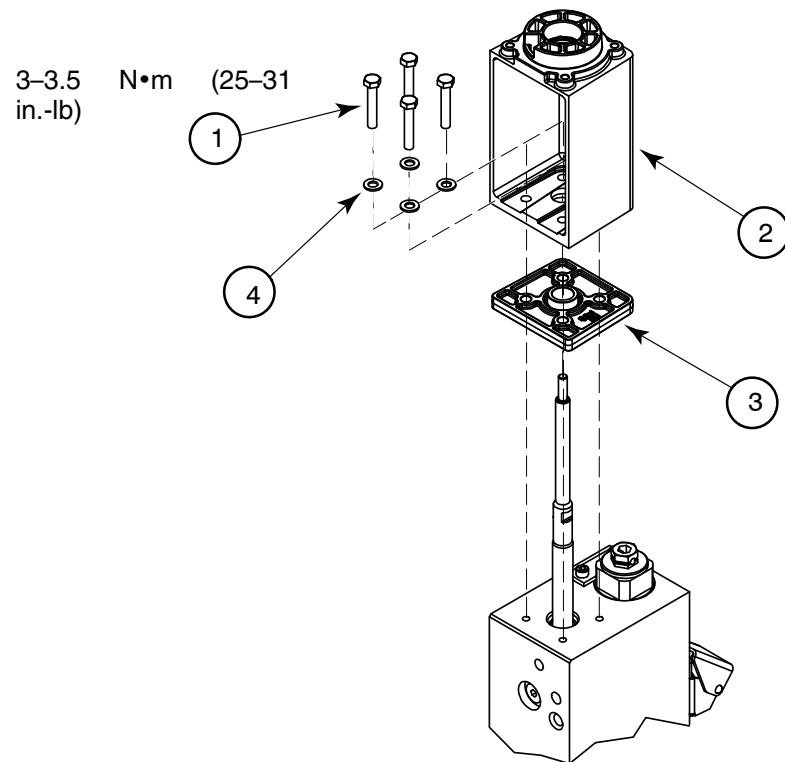


Figure D-11

1. Hex-head screw (4)
2. Pump frame
3. Insulator
4. Washers (4)

Special Reassembly Instructions (contd)

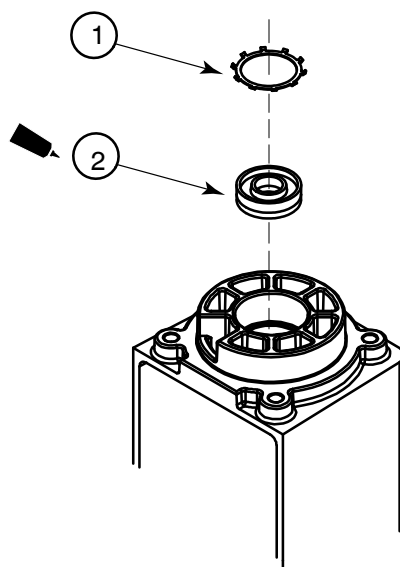


Figure D-12

- 1. Retaining ring
- 2. U-cup

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Remove the Lower Ball Seat Assembly and the Piston

CAUTION: Handle the piston with care. Damaging the precision machined surface of the piston can result in failure of the pump.

See Figure D-13.

1. Unscrew the lower ball seat assembly (2) from the pump body.
2. Pull the piston (1) out of the bottom of the pump body.

Check/Repair	
Pump body P/N 1016863	Remove solidified adhesive before reassembly
Piston P/N 1022658	Nicked or worn Remove solidified adhesive before reassembly

Special Reassembly Instructions

- Apply Never-seez to the threads of the lower ball seat before reinstalling the seat into the pump body.
- Apply O-ring lubricant to the lower ball seat O-ring.

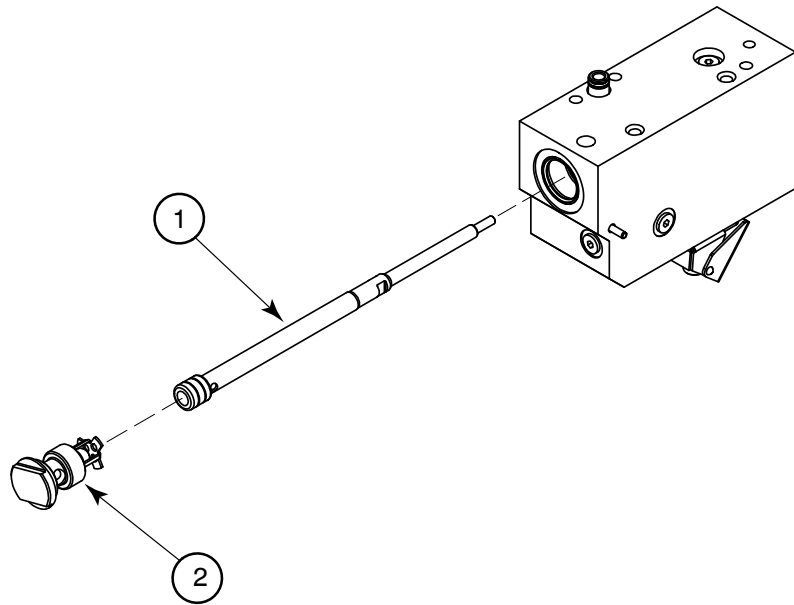


Figure D-13

1. Piston
2. Lower ball seat assembly

Disassemble the Lower Ball Seat and the Pressure Ball Assemblies

See Figure D-14.

1. Pull the siphon ball cage (1) off of the lower ball seat (4), and then remove the siphon ball (2).
2. Remove the O-ring (3) from the lower ball seat.

See Figure D-15.

3. Unscrew the pressure ball seat (3) from the piston (1), and then remove the pressure ball (2).

Check/Repair		
Siphon ball P/N 900001 Pressure ball P/N 900000	Char buildup	
Ball seats P/N 1017320	Char buildup or damage	Apply Never-seez during reassembly
Siphon ball cage P/N 503696	Char buildup or damage	
Lower ball seat O-ring P/N 945037	Nicked, gouged, deteriorated, or swollen	Apply Parker lubricant during reassembly

NOTE: Clean all hydraulic components in a container of Type R fluid before reassembling them.

Special Reassembly Instructions

- If the siphon ball cage does not fit tightly onto the lower ball seat, gently bend the legs of the cage together to create a spring-fit onto the seat.

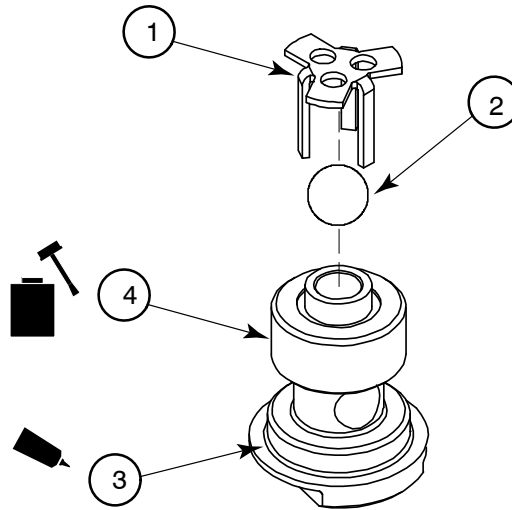


Figure D-14

1. Siphon ball cage
2. Siphon ball
3. O-ring
4. Lower ball seat

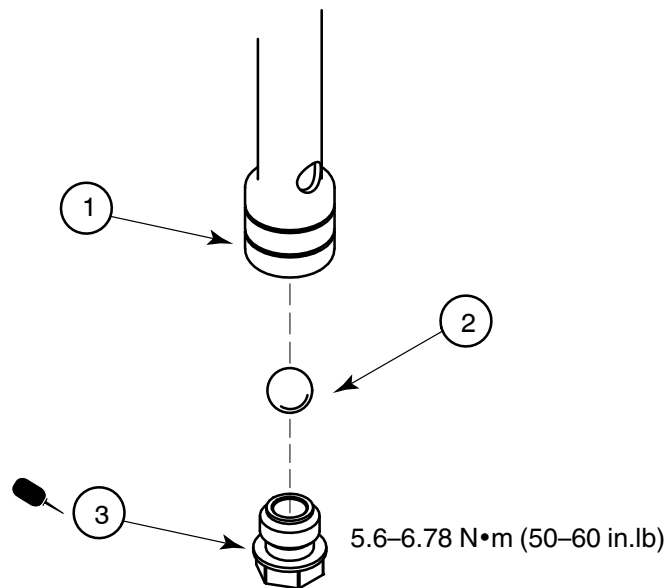


Figure D-15

1. Piston
2. Pressure ball
3. Pressure ball seat

Remove the O-ring and the Pump Seal

See Figure D-16.

Remove the O-ring (1) and pump seal (2) from the pump body.

Check/Repair		
O-ring P/N 940172	Nicked, cut, deteriorated, or swollen	Apply Parker lubricant during reassembly
Pump Seal P/N 273139	Nicked, cut, deteriorated, or deformed	Apply Parker lubricant during reassembly

Special Reassembly Instructions

- The O-ring and the pump seal are replaced after the piston is reinstalled, but before the insulator and pump frame are installed. Refer to *Removing the Pump Frame and the Insulator* for information about reinstalling the O-ring and the pump seal.

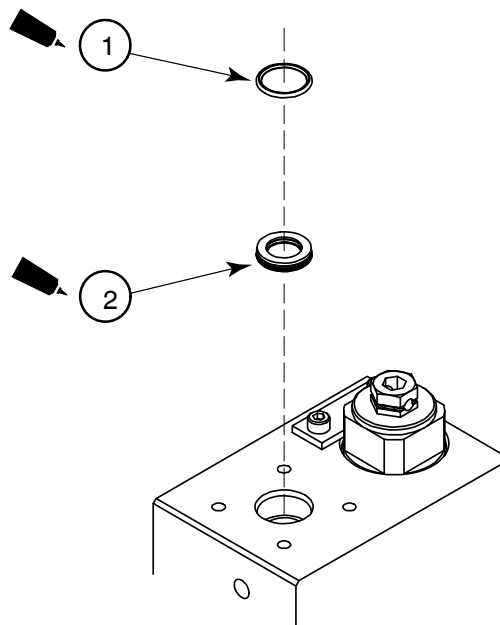
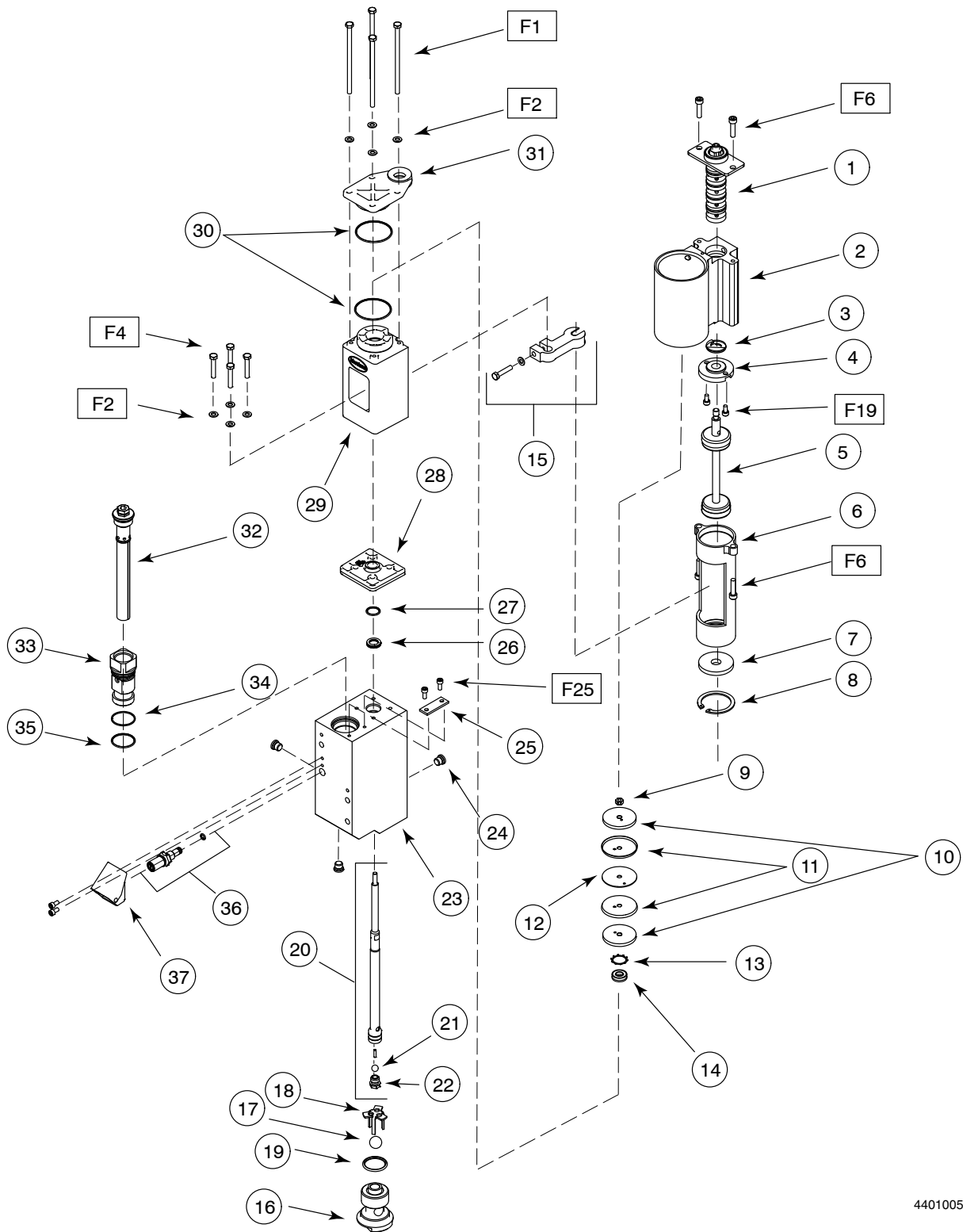


Figure D-16

1. O-ring
2. Pump Seal

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Pump Assembly Parts List



4401005A

Item	Used	Part	Description	Quantity	Note
—		-----	Pump, piston, 14:1	1	A
1		1006027	• Service kit, valve assembly, G2SP	1	
2		1021998	• Manifold, air, G ¹ / ₈ in. port	1	
3		333560	• Spring, wave, Inconel,	1	
4		155057	• Detent, upper	1	
5		164606	• Service kit, magnetic actuator	1	
6		155068	• Can	1	
7		155067	• Detent, lower	1	
8		986714	• Retaining ring, internal, 156, bowed	1	
9		984092	• Nut, hex, lock, torque, M6, class 10	1	
10		983446	• Washer, piston cup	2	
11		163039	• Cup, piston	2	
12		983445	• Washer, piston seal	1	
13		986331	• Retaining ring, internal, 100, push-on	1	
14		952100	• Cup, U, Viton	1	
15		166880	• Service kit, fork magnetic	1	
16		1017320	• Seat, ball, lower	1	
17		900001	• Ball, 440 stainless steel, 0.500 in.	1	
18		503696	• Cage, ball, siphon	1	
19		945037	• O-ring, Viton, 1 in. tube	1	
20		1022658	• Piston assembly	1	
21		900000	• • Ball, 440 stainless steel, 0.375 in.	1	
22		503709	• • Seat, ball, pressure	1	
23		1016863	• Body, pump filter	1	
24		973543	• Plug, O-ring, straight thread, 7/16-20	3	
25		1021270	• Plate, filter, anti-rotation	1	
26		273139	• Seal, pump	1	
27		940172	• O-ring, Viton, 0.676 x 0.070	1	
28		1017307	• Insulator, pump	1	
29		1016339	• Frame, pump	1	
30		940332	• O-ring, 2.000 x 2.125 x 0.063 in.	2	
31		333137	• Head, cylinder	1	
32		-----	• Filter assembly, 100-mesh, with O-ring	1	B
33		1021955	• • Adapter, filter assembly	1	
34		1017849	• • Backup ring, PTFE, 0.273 x 0.045	1	
35		940261	• O-ring, Viton, 1.250 x 0.375 x 0.063 in.	1	
36		276024	• Valve assembly, drain	1	
37		1022779	• Chute assembly, drain	1	
NOTE A: Included in service kit P/N 1028303 B: Included in service kit P/N 1028305					

Pump Service Kit

Part	Description	Quantity
1028304	Kit, service, pump, P4/P7/P10	—
940133	• O-ring, Viton, 0.426 x 0.070 in.	2
940332	• O-ring, Viton, 2.00 x 2.125 x 0.063 in.	2
1019515	• O-ring, Viton, 0.50 x 0.75 x 0.125 in.	1
942111	• O-ring, Viton, 0.812 x 0.062 x 0.125 in.	1
940181	• O-ring, Viton, 0.739 x 0.70 in.	4
952100	• Cup, U, Viton	1
954013	• Backup ring, single, $\frac{7}{16} \times \frac{9}{16}$	2
163039	• Cup, piston	2
273139	• Seal, pump	1
986331	• Retaining ring, internal, 100, push-on	1
984092	• Nut, hex, lock, torque, M6	1
982147	• Screw, hex, cap, M6 x 120	4
982237	• Screw, hex, cap, M6 x 35	4
983410	• Washer, flat, M6	8
940172	• O-ring, Viton, 0.676 x 0.070	1
-----	• Lubrication, Parker, $\frac{1}{2}$ oz.	1
940261	• O-ring, Viton, 1.25 x 1.375 x .063	1
1017849	• Backup ring, PTFE, 1.273 x .045 thick	1
945037	• O-ring, Viton, 1-inch tube	1
973543	• Plug, O-ring, $\frac{7}{16}$ -20	3
211228	Service kit, SP lubricating oil	—

Other Pump Maintenance Kits

Part	Description	Quantity
1006027	Service kit, valve assembly, G2SP	—
164606	Service kit, magnetic actuator	—
166880	Service kit, fork magnetic	—

Schedule of Fasteners

Part	Description
F1	• Screw, hex, cap, M6 X 120 mm
F2	• Washer, flat, M, narrow, M6
F4	• Screw, hex, cap, M6 X 35 mm
F6	• Screw, hex, cap, M5 X 20 mm
F19	• Screw, hex, cap, M4 X 8 mm

